General Report 100
April 1962

Integrated Feed Operations Through Farmer Cooperatives, 1959

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U.S. Department of Agriculture

FARMER COOPERATIVE SERVICE
U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON 25, D. C.

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The Farmer Cooperative Service conducts research studies and service activities of assistance to farmers in connection with cooperatives engaged in marketing farm products, purchasing farm supplies, and supplying business services. The work of the Service relates to problems of management, organization, policies, merchandising, product quality, costs, efficiency, financing, and membership.

The Service publishes the results of such studies; confers and advises with officials of farmer cooperatives; and works with educational agencies, cooperatives, and others in the dissemination of information relating to cooperative principles and practices.

This study was made in close cooperation with the Farm Supplies Branch, Purchasing Division, Farmer Cooperative Service. The author is particularly grateful for the valuable assistance of J. Warren Mather, Chief, and Arno J. Hangas in designing and testing the questionnaires, obtaining data from cooperatives, and reviewing the manuscript for the report. Acknowledgment also is expressed to Kelsey B. Gardner, Director, Management Services Division, for general supervision and planning. For their substantial contribution to the preparation of the report, appreciation is due Elizabeth J. Simmons and Florence L. Parker, History and Statistics Branch.

Appreciation is also expressed for the essential assistance of farmer cooperatives in furnishing the information on which this study is based.

Contents

Highlights

Farmer Cooperative Service made this study to determine the types and extent of integrated feed services provided for farmers by their cooperatives in 1959.

The Service gathered this information because of the increasing interest of farmer cooperatives in further economic integration. The progress of cooperatives in integrating their activities can only be measured for various periods by data on facilities owned or operated, quantities of products handled, and services performed at the primary levels of operation. Such information was developed for 4,232 cooperatives that handled feed for their patrons in 1959.

Manufacturing. - In 1959, 821 cooperatives operated 1,054 mills that produced a little more than 7 million tons of formula feeds (registered feeds produced for sale). Fifty-three percent was poultry feeds; 43 percent, dairy and other livestock feeds; and 4 percent, miscellaneous feeds. Their combined production of poultry and livestock feeds represented almost 24 percent of the total United States production of these feeds.

Wholesaling. - A total of 168 cooperatives distributed at wholesale almost 6 million tons of feed. Formula feeds accounted for 67 percent of this tonnage; ingredients, almost 29 percent; and whole and cracked grains, 4 percent.

Retailing. - Cooperatives operated 5,310 local feed stores and warehouses through which they distributed at retail almost 12 million tons of feed. Formula feeds accounted for a little more than 7.8 million tons of this volume; whole and cracked grains for 2.8 million tons; ingredients, 1.3 million tons; and hay and other roughages, 58,000 tons.

Custom grinding and mixing. - Cooperatives operated 2,786 stationary and 122 mobile mills for custom grinding and mixing. In these mills, they custom ground 6.7 million tons and custom mixed 6.1 million tons of feed.

Warehousing and delivery. - Cooperatives operated 992 warehouses, other than at their mills, for sacked feed. Other feed facilities operated by cooperatives included 1,027 bulk feed loading stations at their mills and 117 bulk feed loading stations at transfer or relay stations. They operated 6,400 delivery trucks in which they delivered about 6.4 million tons of feed.

Feed financing. - The volume of feed sales financed by cooperatives amounted to $108.5 million. Almost $96 million of this amount represented seasonal, long-term, or contract financing.

Extent of integration. - Cooperatives manufactured in 1959 almost 90 percent of the formula feeds they retailed. Wholesale cooperatives supplied over 70 percent of the formula feeds that retail cooperatives obtained through wholesale channels (exclusive of feed they manufactured locally). Cooperatives delivered to farmers about 47 percent of the total volume of feed they retailed. Of these deliveries, 46 percent was in bulk and 54 percent in sacks. They financed through various programs about one-fifth of the total volume of formula feeds they retailed.

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Farmers require large quantities of feeds in their production of livestock and poultry. They spend more each year for this production item than for any other. Feed has also continued to represent the most important production supply handled by farmer cooperatives.

Feed was one of the earliest supply items farmers obtained on a cooperative basis. They first pooled their orders for shipment from existing mills for distribution direct from railroad cars. Farmers later began forming local retail cooperatives to warehouse and deliver feed and to custom grind and mix feed for them.

The next step was forming wholesale cooperatives that contracted with mills to produce feeds according to the cooperatives' formulas and under the cooperatives' brands.

The next major step cooperatives undertook was milling formula feed (registered feeds produced for sale). Cooperatives developed transportation services at each of these stages. In recent years, financing feed has become of increasing importance.

Changes taking place in agriculture, and particularly the development of contract feeding plans and scientific feeding programs, have stimulated interest in the extent and types of integrated feed operations conducted by farmer cooperatives.

Farmers have come to rely more and more on their own business agencies to perform many off-the-farm marketing and production supply procurement jobs that have become a part of modern agricultural operations. There is need, therefore, of information on the extent to which farmers, through their cooperatives, are manufacturing, processing, and distributing farm products and production supplies.

It is particularly appropriate that studies to provide this information be made in a period when further expansion into such integrated activities is regarded as the most logical way for farmers to increase the returns from their agricultural operations.

Purpose of Study

The purpose of this study was to determine the nature and extent of integrated feed operations of farmer cooperatives in the 1959 fiscal year.

The study supplies information on: (1) Numbers, types, and capacities of feed facilities owned or operated by farmer cooperatives; (2) physical quantities (tons) and types of feeds handled at various levels of operations; and (3) numbers and kinds of services or functions cooperatives performed in manufacturing and distributing feeds.

Farmer Cooperative Service collects and publishes annual statistics on the number of farmer cooperatives handling feeds and on the total sales value of these products. These statistics, however, provide no information on how far cooperatives have integrated primary feed services such as manufacturing formula feeds and operating feed mills, bulk loading facilities, relay stations, feed stores and warehouses, delivery trucks, and other distribution facilities. Nor do these statistics provide an accurate measure of the physical volumes of various types of feeds handled by cooperatives at different levels of operation. The extent of integration can only be measured accurately by obtaining data on tonnages of feed handled at each stage.

There is increasing awareness that greater attention must be given to the possibilities of integrating the operations of farmer cooperatives so that the producer may be in a more advantageous position in acquiring production supplies, including feeds. Cooperative management, in making decisions relating to further integration and diversification, requires more complete and precise information on the relative importance of the major cooperative services and functions performed in manufacturing and distributing feeds required by their farmer patrons.

If detailed and comparable information is compiled periodically on different levels of operation, it will provide the necessary bench marks for measuring trends in growth and integration and the relative importance of cooperatives in the feed industry.

Method of Study

Information for the 1959 fiscal year was provided in a mail questionnaire by all regional and local cooperatives that were manufacturing and wholesaling feed and by a selected sample of local cooperatives that were retailing feed.

Copies of the two questionnaires used are included in the appendix. One questionnaire covered retail operations and went to associations whose feed operations were understood to be only retailing. The other included wholesale and manufacturing operations, as well as retailing, and went to regional cooperatives and to local cooperatives that manufactured or wholesaled feeds.

Information came in from 2,430 of the 4,232 associations whose feed operations were analyzed in the report. Retail estimates were developed for 1,724 local

associations retailing feed that either were not included in the sample or that did not supply information on their operations. These estimates were developed on the basis of the information furnished by the respondent group of those associations retailing only, together with information supplied in the annual survey on dollar volume of feed sold by individual associations.

In addition, on the basis of reported quantitative data in this study as well as dollar volume of feed reported in the FCS annual survey, we developed estimates for 78 associations that manufactured and retailed some formula feed but did not provide quantitative information for this study.

The difference between the 4,232 associations included in the report and the 4,489 associations reporting feed sales in the annual survey by Farmer Cooperative Service in 1959-60 constitutes local associations retailing very small amounts of feed, or such items as salt, hay, and feed ingredients. Also, some cooperatives that handled feed and operated only part of the 1959 fiscal year are included in the annual survey figure. No estimates were made in this study, however, of the feed they handled in the period they operated in the 1959 fiscal year before going out of business.

Three large farm supply regional cooperatives supplied information on the feed operations of their local retail service stores. Each of these regionals furnished information on manufacturing, wholesaling, and retailing for the business system represented by the regional and its affiliated local service stores.

Each of the manufacturing cooperatives with feed mills jointly owned by regional cooperatives provided information on feed manufacturing. We excluded their output from the manufacturing volume reported by the individual regionals jointly owning these mills in order to avoid duplication in the total volume of feed manufactured by cooperatives.

This report discusses the principal integrated functions or feed services performed by cooperatives: Manufacturing, wholesale distribution, retail distribution, warehousing and delivery, and financing.

Number, Location, and Functions of Cooperatives Handling Feed

The number of cooperatives handling feed at each major level of operation is shown in table 1 according to the geographic areas in which they were located. Of the total of 4,232 associations whose feed operations are covered in the report, 821 manufactured formula feeds (registered feeds produced for sale).

In addition to manufacturing formula feeds, 77 of these 821 associations both wholesaled and retailed feed; 726 retailed feed; and 15 wholesaled only. Three associations organized by regional wholesale cooperatives performed the formula feed manufacturing function only. Another 62 associations both wholesaled and retailed feed but did not manufacture formula feed; 14 wholesaled only; and 3,335 performed only the retailing function.

Feed operations of these 4,232 cooperatives were analyzed largely on the basis of the seven geographic areas shown

Table 1. - *Number of cooperatives handling feed by major type of operation and geographic divisions, 1959*

Geographic division	Retailing only			Wholesaling only			Wholesaling and retailing			Manufacturing only		
	Locals	Re-gionals	Total	Locals	Re-gionals	Total	Locals	Re-gionals	Total	Locals	Re-gionals	Total
						Number						
North Atlantic	246	1	247	[1]1	-	[1]1	2	-	2	-	-	-
East North Central	536	2	538	-	4	4	5	1	6	-	[2]1	[2]1
West North Central	1,608	4	1,612	1	5	6	20	3	23	-	[2]1	[2]1
South Atlantic	283	-	283	[1]1	-	[1]1	-	1	1	-	[2]1	[2]1
South Central	444	3	447	[1]1	1	2	18	2	20	-	-	-
Mountain	114	3	117	-	-	-	3	-	3	-	-	-
Pacific	91	-	91	-	-	-	6	1	7	-	-	-
Total	3,322	13	3,335	4	10	14	54	8	62	-	[2]3	[2]3

Geographic division	Manufacturing and wholesaling			Manufacturing and retailing			Manufacturing, wholesaling, and retailing			Total		
	Locals	Re-gionals	Total	Locals	Re-gionals	Total	Locals	Re-gionals	Total	Locals	Re-gionals	Total
						Number						
North Atlantic	-	1	1	83	1	84	-	4	4	332	7	339
East North Central	-	3	3	305	1	306	21	[3]3	[3]24	867	15	882
West North Central	-	7	7	260	1	261	23	[3]7	[3]30	1,912	28	1,940
South Atlantic	-	-	-	10	2	12	-	[3]2	[3]2	294	6	300
South Central	1	2	3	29	-	29	2	2	4	495	10	505
Mountain	-	1	1	9	1	10	1	3	4	127	8	135
Pacific	-	-	-	17	7	24	6	3	9	120	11	131
Total	1	14	15	713	13	726	53	24	77	4,147	85	4,232

[1]Wholesaling ingredients only.
[2]Operating mill(s) jointly owned by regional cooperatives.
[3]Includes an association not operating own mill but having joint ownership in a cooperative mill.

in table 1 and figure 1. A total of 1,940, or more than 45 percent, of these cooperatives were located in the West North Central area. Another 882, or one-fifth of the total, were located in the East North Central area.

Manufacturing Formula Feed

Cooperatives supplied information on the number and capacities of the feed mills they operated to manufacture formula feeds and on the quantities and types of these feeds. Custom operations are not included in this section of the report but are discussed later.

Number and Capacity of Cooperative Mills

In 1959, 821 cooperatives operated a total of 1,054 mills to manufacture formula feeds (table 2). More than two-fifths of the mills were located in the East North Central area which reported a total of 453 mills in operation. Cooperatives in the West North Central area operated 322 mills, or almost one-third of the total, and those in the North Atlantic area operated 107 mills, or slightly more than 10 percent of the total.

The North Atlantic area accounted for over 24 percent and the West North Central area for almost 22 percent of the total cooperative production of formula feeds in 1959, based on mill locations (table 2).[1] Many cooperative mills were very small and manufactured small amounts of formula feeds in addition to their custom grinding and mixing operations.

Table 3 shows the rated capacity an hour reported by the cooperatives. Of the 1,054 mills reporting the manufacture of formula feeds, 535 had a capacity under 5 tons an hour, 143 had a capacity of 5 tons an hour, 253 had a capacity of

[1]Tonnage figures in tables 2, 4, and 5 are presented on the basis of mill locations to facilitate comparisons with data on total United States production of formula feeds. With limited exceptions, the remaining tables in the report show tonnage figures according to destination of shipments.

Table 2. - *Number of cooperative mills manufacturing formula feeds, by geographic divisions, 1959*

Geographic division[1]	Mills producing formula feeds		Formula feeds manufactured	
	Number	*Percent*	*1,000 tons*	*Percent*
North Atlantic	107	10.1	1,712	24.4
East North Central	453	43.0	1,412	20.1
West North Central	322	30.6	1,512	21.6
South Atlantic	55	5.2	1,033	14.7
South Central	40	3.8	140	2.0
Mountain	24	2.3	113	1.6
Pacific	53	5.0	1,094	15.6
Total	1,054	100.0	7,016	100.0

[1]According to mill locations.

Table 3. - *Number and capacity of cooperative mills manufacturing formula feeds, by geographic divisions, 1959*

Geographic division[1]	Capacity specified in tons per hour											Total
	1	2	3	4	5	6-10	11-20	21-30	31-40	41-80	81-120	
						Number of mills						
North Atlantic	-	32	39	9	2	10	6	5	1	1	2	107
East North Central	12	93	100	50	71	90	27	6	2	-	2	453
West North Central	7	49	53	42	54	90	20	3	-	4	-	322
South Atlantic	2	3	1	1	2	34	4	5	1	2	-	55
South Central	-	6	3	8	8	9	3	2	1	-	-	40
Mountain	-	4	4	2	1	11	2	-	-	-	-	24
Pacific	3	8	2	2	5	9	15	6	3	-	-	53
Total	24	195	202	114	143	253	77	27	8	7	4	1,054

[1]According to mill locations.

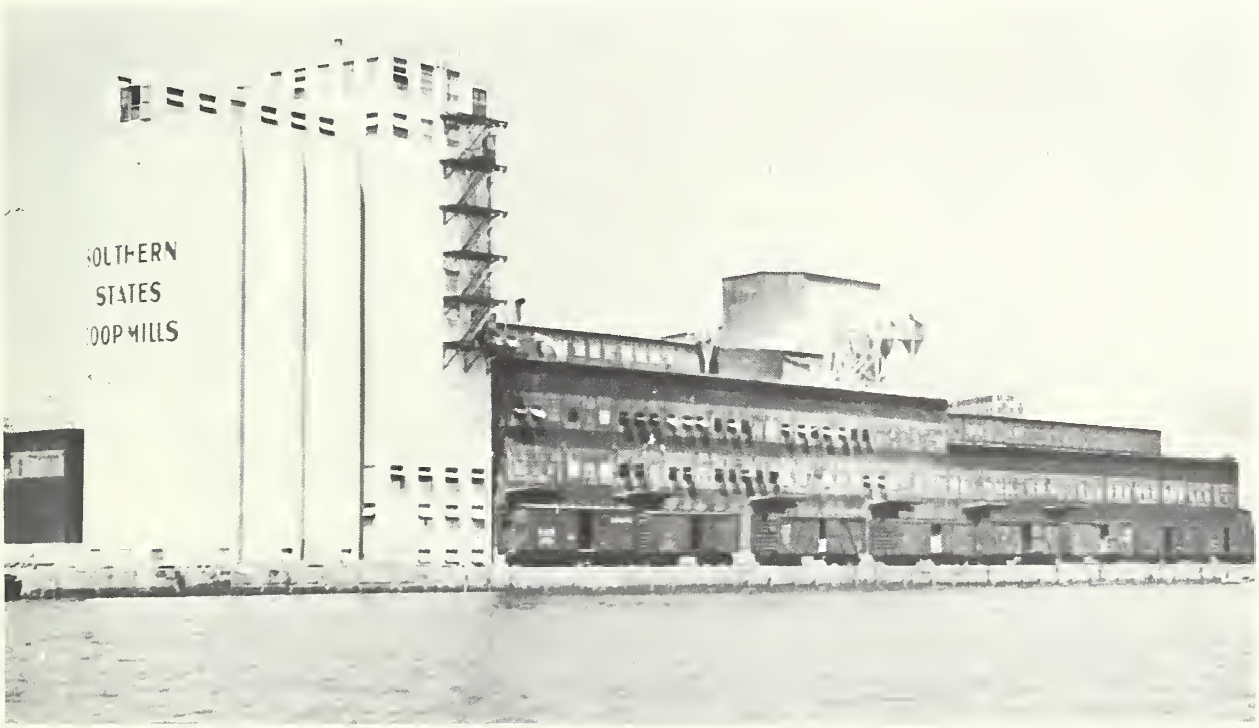
6 to 10 tons an hour, and 123 had a capacity of more than 10 tons an hour.

As pointed out later in this report, only 237 in the entire group of 1,054 mills each manufactured more than 2,000 tons of formula feeds a year. The output of these 237 mills represented almost 92 percent of the formula feeds produced by all cooperative mills. Probably most of the remaining mills did not have sufficient storage and other facilities to perform complete milling operations.

Only the 165 mills that manufactured 5,000 tons or more of formula feeds a year produced an average volume of formula feeds that exceeded their average volume of custom mixed feeds. This would mean that 5,000 tons a year should be considered the minimum volume in determining the number of mills that were primarily manufacturing formula feeds. The 165 mills manufactured 6.2 million tons of formula feeds in 1959, representing 89 percent of the total production of formula feeds by cooperatives. Seventeen of the mills in this group manufacturing 5,000 tons or more produced 3.3 million tons of formula feeds or 47 percent of the total manufactured by cooperatives.

Types and Quantities of Feeds Manufactured

As shown in table 2, these 1,054 mills produced more than 7 million tons of formula feeds in 1959. More than one-half of this production consisted of poultry feeds, including broiler, turkey, and other poultry feeds (table 4). Almost 43 percent was livestock feeds, including dairy, hog, beef, and sheep feeds. The remainder, amounting to 4 percent, consisted of miscellaneous feeds.



Cooperatives operated 1,054 mills for the production of formula feeds in 1959. Many of these mills used two or more types of transportation.

Table 4. - *Formula feeds manufactured by cooperatives, by geographic divisions, 1959*

Geographic division[1]	Formula feeds manufactured							
	Poultry[2]		Livestock[3]		Miscellaneous		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	895	52.2	803	47.0	14	0.8	1,712	100
East North Central	629	44.6	769	54.4	14	1.0	1,412	100
West North Central	412	27.2	949	62.8	151	10.0	1,512	100
South Atlantic	819	79.2	137	13.3	77	7.5	1,033	100
South Central	53	37.9	84	60.0	3	2.1	140	100
Mountain	72	63.7	37	32.7	4	3.6	113	100
Pacific	846	77.3	228	20.9	20	1.8	1,094	100
Total	3,726	53.1	3,007	42.9	283	4.0	7,016	100

[1]According to mill locations.
[2]Includes broiler, turkey, and other poultry feeds.
[3]Includes dairy, hog, beef, and sheep feeds.

There were, of course, important variations in the percentages that poultry or livestock feeds represented in the total production of cooperatives in each of the seven major geographic divisions shown in table 4 and figure 1. Poultry feeds, for example, represented more than three-fourths of the total cooperative production of formula feeds in the South Atlantic and Pacific areas, and almost 64 percent in the Mountain area. Livestock feeds, on the other hand, represented three-fifths or more of total formula feed production of cooperatives in the West North Central and South Central States.

Formula feed manufacturing by type of cooperative is shown in appendix table 1. Farm supply cooperatives accounted for 83 percent of the toal production of 7 million tons of formula feeds manufactured by cooperatives in 1959. Regional farm supply associations produced almost 4.9 million tons or 70 percent, with local associations manufacturing about 13 percent. Grain, poultry, dairy, and other types of cooperatives, produced the remaining 17 percent of the total formula feed tonnage.

Table 5 shows cooperative production of poultry and livestock prepared feeds as a percentage of the total United States production of these feeds that was reported in the 1958 Census of Manufactures. Cooperatives manufactured a little more than 22 percent of the poultry feeds and almost 26 percent of all livestock feeds produced in the United States. They accounted for almost one-fourth of the combined production of these feeds.

Forms in Which Feeds Were Manufactured

Over 66 percent of all formula feeds manufactured by cooperatives were mashes, over 32 percent pellets and crumbles, and less than 2 percent scratch feeds (table 6). The highest proportion in pellets and crumbles was manufactured in the South Atlantic area, with more than one-half of all feeds produced in

Figure 1

Formula Feeds Manufactured by Cooperatives, 1959

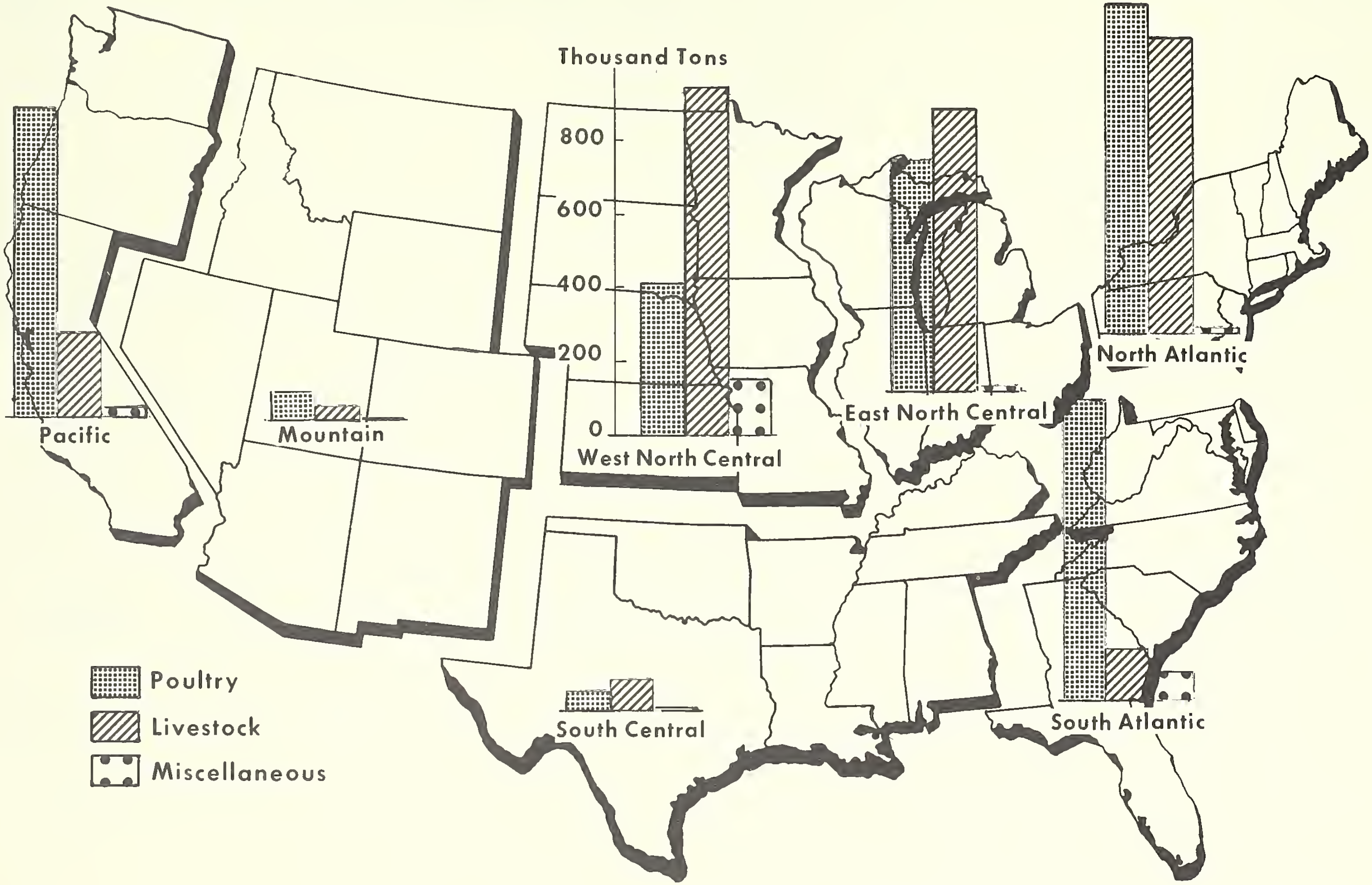


Table 5. - *Poultry and livestock feeds manufactured by cooperatives compared with United States total, 1959*

Geographic division	Poultry feeds[1]			Livestock feeds[2]			Poultry and livestock feeds		
	Manufactured by cooperatives[3]	Total manufactured	Cooperative percent of total[4]	Manufactured by cooperatives[3]	Total manufactured	Cooperative percent of total[4]	Manufactured by cooperatives[3]	Total manufactured	Cooperative percent of total[4]
					1,000 tons				
North Atlantic	895	3,036	29.4	803	1,729	46.4	1,698	4,765	35.6
East North Central	629	2,308	27.2	769	2,703	28.4	1,398	5,011	27.9
West North Central	412	2,004	20.6	949	3,335	28.4	1,361	5,339	25.4
South Atlantic	819	3,779	21.7	137	1,075	12.7	956	4,854	19.7
South Central	53	3,363	1.6	84	1,801	4.7	137	5,164	2.6
Mountain	72	276	26.0	37	301	12.3	109	577	18.9
Pacific	846	1,954	43.2	228	796	28.6	1,074	2,750	39.0
Total	3,726	16,720	22.2	3,007	11,740	25.6	6,733	28,460	23.7

[1]Includes broiler, turkey, and other poultry feeds.
[2]Includes dairy, hog, beef, and sheep feeds.
[3]Volume of cooperatives is shown on the basis of mill locations.
[4]Comparison of volume of formula feeds manufactured by cooperatives in the 1958-59 fiscal year with the total production of prepared feeds reported in the 1958 Census of Manufactures. A few cooperatives reported 1960 data.

Table 6. - *Formula feeds manufactured by cooperatives, by form, 1959*

Geographic division[1]	Form in which formula feeds were manufactured							
	Mashes		Pellets and crumbles		Scratch feeds		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	1,726	75.9	492	21.6	57	2.5	2,275	100
East North Central	608	67.1	293	32.3	5	0.6	906	100
West North Central	907	61.2	567	38.3	7	0.5	1,481	100
South Atlantic	482	47.6	515	50.8	17	1.6	1,014	100
South Central	67	51.6	62	47.7	1	0.7	130	100
Mountain	86	74.1	27	23.3	3	2.6	116	100
Pacific	763	69.7	317	29.0	14	1.3	1,094	100
Total	4,639	66.1	2,273	32.4	104	1.5	7,016	100

[1]According to destination of shipments.

this form. Cooperatives in the North Atlantic area produced only about 22 percent of their formula feeds as pellets or crumbles.

Pellet and crumble production varied greatly according to type of livestock for which it was intended. Over four-fifths of the broiler feeds (table 7) and almost 70 percent of the turkey feeds (table 8) manufactured by cooperatives were pellets and crumbles. On the other hand, three-fourths of other poultry feeds (table 9) were mashes and only about one-fifth were pellets and crumbles.

Geographic divisions differed in the percentages of poultry feeds produced in pellets and crumbles. Table 9, for example, indicates that nearly 57 percent

Table 7. - *Broiler formula feeds manufactured by cooperatives, by form, 1959*

Geographic division[1]	Form of broiler feeds manufactured							
	Mashes		Pellets and crumbles		Scratch feeds		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	31	16.1	162	83.9	(2)	-	193	100
East North Central	15	18.3	67	81.7	(2)	-	82	100
West North Central	8	7.8	91	88.3	4	3.9	103	100
South Atlantic	85	19.4	353	80.4	1	0.2	439	100
South Central	4	25.0	12	75.0	(2)	-	16	100
Mountain	3	100.0	(2)	-	-	-	3	100
Pacific	17	18.0	77	82.0	(2)	-	94	100
Total	163	17.6	762	81.9	5	0.5	930	100

[1]According to destination of shipments.
[2]Less than 500 tons.

Table 8. - *Turkey formula feeds manufactured by cooperatives, by form, 1959*

Geographic division[1]	Form of turkey feeds manufactured							
	Mashes		Pellets and crumbles		Scratch feeds		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	11	29.0	27	71.0	-	-	38	100
East North Central	6	25.0	18	75.0	(2)	-	24	100
West North Central	6	9.0	60	91.0	(2)	-	66	100
South Atlantic	7	16.3	36	83.7	-	-	43	100
South Central	(2)	-	3	100.0	-	-	3	100
Mountain	24	85.7	4	14.3	-	-	28	100
Pacific	29	39.7	43	58.9	1	1.4	73	100
Total	83	30.1	191	69.5	1	0.4	275	100

[1]According to destination of shipments.
[2]Less than 500 tons.

of other poultry feeds in the South Central area and over 46 percent in the West North Central area were pellets and crumbles, while less than 10 percent were made in this form in the Mountain area.

Over 89 percent of all dairy feeds were mashes, with nearly 11 percent in pellets and crumbles (table 10). In the Mountain area, however, more than two-fifths of the dairy feeds produced by cooperatives were pellets and crumbles.

Almost three-fifths of beef and sheep feeds (table 11) manufactured by cooperatives were pellets and crumbles.

Table 9. - *Poultry formula feeds other than broiler or turkey feeds manufactured by cooperatives, by form, 1959*

Geographic division[1]	Form of other poultry feeds manufactured							
	Mashes		Pellets and crumbles		Scratch feeds		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	796	78.3	163	16.0	57	5.7	1,016	100
East North Central	222	85.7	33	12.8	4	1.5	259	100
West North Central	123	52.6	108	46.1	3	1.3	234	100
South Atlantic	176	67.7	68	26.2	16	6.1	260	100
South Central	12	40.0	17	56.7	1	3.3	30	100
Mountain	36	83.7	4	9.3	3	7.0	43	100
Pacific	532	78.3	134	19.7	13	2.0	679	100
Total	1,897	75.2	527	20.9	97	3.9	2,521	100

[1]According to destination of shipments.

Table 10. - *Dairy formula feeds manufactured by cooperatives, by form, 1959*

Geographic division[1]	Form of dairy feeds manufactured					
	Mashes		Pellets and crumbles		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	809	87.0	121	13.0	930	100
East North Central	154	95.7	7	4.3	161	100
West North Central	417	95.4	20	4.6	437	100
South Atlantic	110	80.3	27	19.7	137	100
South Central	33	97.0	1	3.0	34	100
Mountain	11	57.9	8	42.1	19	100
Pacific	159	90.0	18	10.0	177	100
Total	1,693	89.3	202	10.7	1,895	100

[1]According to destination of shipments.

Table 11. - *Beef and sheep formula feeds manufactured by cooperatives, by form, 1959*

Geographic division[1]	Form of beef and sheep feeds manufactured					
	Mashes		Pellets and crumbles		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	21	91.3	2	8.7	23	100
East North Central	36	57.1	27	42.9	63	100
West North Central	31	26.8	85	73.2	116	100
South Atlantic	2	66.7	1	33.3	3	100
South Central	7	33.3	14	66.7	21	100
Mountain	5	41.7	7	58.3	12	100
Pacific	9	23.7	29	76.3	38	100
Total	111	40.2	165	59.8	276	100

[1]According to destination of shipments.

Table 12. - *Hog formula feeds manufactured by cooperatives, by form, 1959*

Geographic division[1]	Form of hog feeds manufactured					
	Mashes		Pellets and crumbles		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	29	71.0	12	29.0	41	100
East North Central	160	53.0	142	47.0	302	100
West North Central	179	47.7	196	52.3	375	100
South Atlantic	46	61.3	29	38.7	75	100
South Central	7	31.9	15	68.1	22	100
Mountain	4	50.0	4	50.0	8	100
Pacific	4	30.8	9	69.2	13	100
Total	429	51.3	407	48.7	836	100

[1]According to destination of shipments.

Total cooperative production of hog feeds (table 12) was almost evenly divided between mashes and pellets and crumbles.

Miscellaneous feeds manufactured by cooperatives were primarily mashes with only about 7 percent in pellets and crumbles (table 13).

Pre-Mix Concentrates

Table 14 shows by geographic areas the amount of each of the different types of formula feeds cooperatives produced as a concentrate or supplement to be further mixed with other ingredients or fed with homegrown grains. This form of feed was produced mostly for laying hens, dairy cows, and other livestock. The total of almost 965,000 tons thus produced represented about 15 percent of all formula feeds manufactured by the reporting cooperatives.

Table 15 shows in each geographic area the amount of the total feeds manufactured by reporting cooperatives that was produced from basic ingredients and the amount manufactured with a pre-mix concentrate (other than a vitamin or mineral pre-mix) as a base. Feed manufactured from basic ingredients or "from the ground up" represented almost 93 percent of the total formula feeds manufactured by the reporting cooperatives and those in which a pre-mix concentrate was used as a base accounted for the remainder of 7 percent. The tonnage analyzed in table 15 is somewhat lower than the estimated total volume manufactured because estimates were not made for cooperatives that did not report or did not answer this part of the questionnaire.

Transportatation of Formula Feeds from Mills

Cooperatives furnished information on the percentages of feeds they shipped from their mills by rail and by truck,[2] and on the percentages in sacks and in bulk form.

[2]Outbound shipments to wholesale outlets, retail outlets, and directly to farmers.

Table 13. - *Miscellaneous formula feeds manufactured by cooperatives, by form, 1959*

Geographic division[1]	Form of miscellaneous feeds manufactured							
	Mashes		Pellets and crumbles		Scratch feeds		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	28	87.5	4	12.5	-	-	32	100
East North Central	15	93.8	1	6.2	(2)	-	16	100
West North Central	144	96.0	6	4.0	(2)	-	150	100
South Atlantic	58	98.3	1	1.7	(2)	-	59	100
South Central	2	100.0	(2)	-	-	-	2	100
Mountain	3	75.0	1	25.0	-	-	4	100
Pacific	13	65.0	6	30.0	1	5.0	20	100
Total	263	92.9	19	6.7	1	0.4	283	100

[1]According to destination of shipments.
[2]Less than 500 tons.

Table 14. - *Proportion of major types of formula feeds produced by cooperatives as concentrates or supplements, by geographic divisions, 1959*

Geographic division[1]	Broiler			Turkey			Other poultry			Dairy		
	Total produced	Proportion manufactured as concentrates or supplements		Total produced	Proportion manufactured as concentrates or supplements		Total produced	Proportion manufactured as concentrates or supplements		Total produced	Proportion manufactured as concentrates or supplements	
	Tons	*Tons*	*Percent*	*Tons*	*Tons*	*Percent*	*Tons*	*Tons*	*Percent*	*Tons*	*Tons*	*Percent*
North Atlantic	75,137	1,176	1.6	8,719	184	2.1	774,900	29,196	3.8	706,095	93,270	13.2
East North Central	134,274	3,948	2.9	43,946	4,785	10.9	383,947	68,917	17.9	317,112	78,699	24.8
West North Central	101,962	999	0.9	61,017	14,713	24.1	210,639	93,698	44.4	442,187	61,508	13.9
South Atlantic	490,524	14,606	3.0	44,289	1,225	2.8	285,160	14,451	5.0	83,931	19,078	22.7
South Central	15,945	215	1.3	3,910	90	2.3	32,559	4,414	13.6	35,571	2,762	7.8
Mountain	2,655	214	8.0	27,907	-	-	42,717	131	0.3	18,273	10	0.1
Pacific	94,012	345	0.3	71,647	16,139	22.5	664,551	30,447	4.6	168,919	1,349	0.8
Total	914,509	21,503	2.3	261,435	37,136	14.2	2,394,473	241,254	10.0	1,772,088	256,676	14.4

Geographic division 1	Hog			Beef and sheep			Miscellaneous			Total[2]		
	Total produced	Proportion manufactured as concentrates or supplements		Total produced	Proportion manufactured as concentrates or supplements		Total produced	Proportion manufactured as concentrates or supplements		Total produced	Proportion manufactured as concentrates or supplements	
	Tons	*Tons*	*Percent*	*Tons*	*Tons*	*Percent*	*Tons*	*Tons*	*Percent*	*Tons*	*Tons*	*Percent*
North Atlantic	16,408	3,927	23.9	15,039	2,877	19.1	14,107	115	0.8	1,610,405	130,745	8.1
East North Central	303,463	142,300	46.9	59,888	18,597	31.0	10,609	2,098	19.8	1,253,239	319,344	25.4
West North Central	331,232	140,656	42.4	103,799	53,913	51.9	146,272	6,322	4.3	1,397,108	371,809	26.6
South Atlantic	48,633	16,278	33.4	3,672	2,487	67.7	77,151	144	0.2	1,033,360	68,269	6.6
South Central	26,265	11,909	45.3	23,058	525	2.2	3,048	243	8.0	140,356	20,158	14.3
Mountain	6,587	23	0.3	10,741	63	0.6	3,890	300	7.7	112,770	741	0.7
Pacific	16,363	1,719	10.5	35,472	2,070	5.8	19,769	1,395	7.0	1,070,733	53,464	5.0
Total	748,951	316,812	42.3	251,669	80,532	32.0	274,846	10,617	3.9	6,617,971	964,530	14.6

[1] According to mill locations.
[2] Does not include estimates for nonreporting associations or for those associations that did not provide this information.

Table 15. - *Formula feeds manufactured by cooperatives from basic ingredients or with a pre-mix concentrate as a base, by geographic divisions, 1959*

Geographic division[1]	Quantities of formula feeds manufactured					
	From basic ingredients		With a pre-mix as a base		Total[2]	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	1,531	95.0	79	5.0	1,610	100
East North Central	1,028	82.0	225	18.0	1,253	100
West North Central	1,313	94.0	84	6.0	1,397	100
South Atlantic	1,014	98.1	19	1.9	1,033	100
South Central	134	95.7	6	4.3	140	100
Mountain	99	87.6	14	12.4	113	100
Pacific	1,029	96.0	42	4.0	1,071	100
Total	6,148	92.9	469	7.1	6,617	100

[1]According to mill locations.
[2]Does not include estimates for nonreporting associations or those associations that did not provide this information.

Shipments by Rail and by Truck

More than three-fifths of the volume of feed for which method of shipment was reported went by truck (table 16). The percentage of the total shipped from the mill by truck ranged from 39.6 percent in the North Atlantic area to 96.6 percent in the Mountain area. Only one cooperative, a regional association in the North Atlantic area, shipped all of the formula feeds it manufactured from its mills by rail.

Out of the total of 757 cooperatives reporting, a total of 717 associations, or almost 95 percent, made all of such feed shipments by truck. Thirty-nine other associations shipped various percentages by truck and by rail.

Slightly more than one-half of the regional cooperatives shipped various percentages of feed from their mills by rail. Only about 2 percent of the local cooperatives, however, reported shipping feed from their mills by rail.

Shipments in Sacks and in Bulk

One of the most rapid changes in feed handling methods has been the change to bulk feed. In many areas, cooperatives have been leaders in effecting this change because farmers eventually benefit most from bulk feed through labor saving on the farm.

Almost 35 percent of all feed shipments from the formula feed mills of cooperatives were made in bulk in 1959 (table 17). Both the proportion and the absolute tonnage in bulk was by far the highest on the Pacific Coast where bulk feed delivery first started during World War II. Cooperative mills in this area shipped 67 percent of all their formula feed in bulk. Some mills in this area shipped 90 percent or more of their output in bulk.

Table 16. - *Outbound feed shipments from cooperative mills by rail and by truck, by geographic divisions, 1959*

Geographic division[1]	Amount of feed shipped - By rail		By truck		Total[2]	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	1,314	60.4	859	39.6	2,173	100
East North Central	143	19.0	605	81.0	748	100
West North Central	372	27.2	995	72.8	1,367	100
South Atlantic	352	34.7	662	65.3	1,014	100
South Central	5	3.8	125	96.2	130	100
Mountain	4	3.4	112	96.6	116	100
Pacific	335	30.6	758	69.4	1,093	100
Total	2,525	38.0	4,116	62.0	6,641	100

[1]According to destination of shipments.
[2]Does not include estimates for nonreporting associations or those associations that did not provide this information.

In proportion of feed shipped in bulk, the Mountain and South Atlantic areas ranked second and third, with 44 percent and 36 percent, respectively. In actual tonnage of bulk feed shipments, however, the North Atlantic area was a close second to the Pacific States.

In many of the less intensive feeding areas within these regions, particularly in the North Atlantic and Pacific States, feed is also shipped in bags for delivery in combination bag-bulk trucks. Much of this tonnage eventually is unloaded in bulk on the farm. Bulk farm delivery

Table 17. - *Outbound feed shipments from cooperative mills in bulk and in sacks, by geographic divisions, 1959*

Geographic division[1]	Amount of feed shipped - In bulk		In sacks		Total[2]	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	683	31.4	1,490	68.6	2,173	100
East North Central	152	20.3	596	79.7	748	100
West North Central	275	20.1	1,092	79.9	1,367	100
South Atlantic	363	35.8	651	64.2	1,014	100
South Central	32	24.6	98	75.4	130	100
Mountain	51	44.0	65	56.0	116	100
Pacific	734	67.2	359	32.8	1,093	100
Total	2,290	34.4	4,351	65.6	6,641	100

[1]According to destination of shipments.
[2]Does not include estimates for nonreporting associations or those associations that did not provide this information.

in these areas would, therefore, be higher than that indicated by mill shipments in bulk in table 17. Such deliveries to the farm are discussed in a later section of this report on "Warehousing and Delivery."

The proportion of rail shipments from cooperative mills made in bulk and in sacks is shown in table 18. Rail shipments were primarily in sacks, with only about 17 percent of the total shipped in bulk. The South Central and Mountain areas reported no rail shipments in bulk. In the Pacific area, however, a little more than 56 percent of rail shipments of feed from cooperative mills were in bulk form.

Of the 40 associations that reported rail shipments from their feed mills, 23, or more than half, made all these shipments in sacks. One association made all its rail shipments of feed in bulk and four others made more than 60 percent of their shipments in bulk.

The proportion of truck shipments of feed from cooperative mills made in bulk and in sacks is shown in table 19. Slightly more than 45 percent of these truck shipments moved in bulk. The percentages shipped in bulk ranged from a little over 23 percent in the East North Central area to 72 percent in the Pacific area.

Two associations reported that all of their truck shipments from the mill were in bulk form. They reported no feed shipments by rail. One of these two associations was in the West North Central area and the other in the Mountain area. A total of 150 other associations, or one-fifth of the total number reporting, made one-half or more of their truck shipments in bulk. Three-fifths of all associations reporting made at least a portion of their feed shipments from the mill in bulk form.

Table 18. - *Outbound feed shipments from cooperative mills by rail in bulk and in sacks, by geographic divisions, 1959*

Geographic division[1]	Amount of feed shipped by rail -					
	In bulk		In sacks		Total[2]	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	177	13.5	1,137	86.5	1,314	100
East North Central	11	7.7	132	92.3	143	100
West North Central	21	5.6	351	94.4	372	100
South Atlantic	21	6.0	331	94.0	352	100
South Central	-	-	5	100.0	5	100
Mountain	-	-	4	100.0	4	100
Pacific	188	56.1	147	43.9	335	100
Total	418	16.6	2,107	83.4	2,525	100

[1]According to destination of shipments.
[2]Does not include estimates for nonreporting associations or those associations that did not provide this information.

Table 19. - *Outbound feed shipments from cooperative mills by truck in bulk and in sacks, by geographic divisions, 1959*

Geographic division[1]	Amount of feed shipped by truck -					
	In bulk		In sacks		Total[2]	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	506	58.9	353	41.1	859	100
East North Central	141	23.3	464	76.7	605	100
West North Central	254	25.5	741	74.5	995	100
South Atlantic	342	51.6	320	48.4	662	100
South Central	32	25.6	93	74.4	125	100
Mountain	51	45.5	61	54.5	112	100
Pacific	546	72.0	212	28.0	758	100
Total	1,872	45.5	2,244	54.5	4,116	100

[1]According to destination of shipments.
[2]Does not include estimates for nonreporting associations or for those associations that did not provide this information.

Formula Feed Manufactured and Milling Capacity

An analysis of the quantities of formula feeds manufactured by cooperatives in relation to capacities of mills showed that a total of 821 cooperatives operated 1,054 mills with a combined total mixing capacity of 7,136 tons an hour. These 1,054 mills produced over 7 million tons of formula feeds in 1959.

If all these mills had been equipped for continuous production, they could have produced about 14.3 million tons of formula feed a year on a one 8-hour shift basis, or twice the tonnage they actually produced.

This comparison of production with capacity may not be very meaningful because: (1) Many mills operated more than 8 hours a day or more than one shift and (2) many of the smaller mills were primarily custom mills with relatively high grinding and mixing capacity in relation to formula feeds produced. The grinding and mixing capacity was installed primarily for rapid servicing of custom milling patrons. This capacity was occasionally used for short periods for formula feed mixing, but many of these mills were not equipped to produce formula feeds on a continuous basis.

Formula Feed Milled and Feed Custom Ground and Mixed

A problem encountered in this study was whether to classify mills as primarily complete formula feed mills, primarily custom grinding and mixing mills, or combination types. An analysis, therefore, was made of the quantity of formula feed manufactured and the quantity of feed custom mixed by each mill (table 20).

This analysis indicated that a total of 817 mills operated by 684 cooperatives produced some formula feeds, but their main business was custom grinding and mixing. They each produced less than 2,000 tons of formula feeds in 1959. Their total output of formula feeds was

Table 20. - *Formula feeds manufactured in relation to feed custom mixed by cooperatives, 1959*

Formula feeds manufactured by each association	Associations manufacturing formula feeds	Mills operated for formula feeds	Total formula feeds manufactured	Associations custom mixing feeds	Total feed custom mixed
A - Associations manufacturing 2,000 tons or more					
Tons	*Number*	*Number*	*1,000 tons*	*Number*	*1,000 tons*
2,000 - 4,999	59	72	192	58	289
5,000 - 9,999	18	23	122	18	85
10,000 - 14,999	14	48	187	13	82
15,000 - 19,999	6	7	102	4	22
20,000 - 49,999	20	31	844	6	15
50,000 - 99,999	10	18	561	3	11
100,000 - 499,999	6	21	1,140	2	4
500,000 and over	4	17	3,302	1	84
Total	137	237	6,450	105	592
B - Associations manufacturing less than 2,000 tons	684	817	566	679	2,351
Total	821	1,054	7,016	784	2,943

566,000 tons, while their total volume of custom mixing was almost 2.4 million tons. Their volume of formula feeds constituted only about 8 percent of the formula feeds produced by all cooperative mills. Thus, only 237 mills producing 92 percent of all formula feeds manufactured by cooperatives could be regarded as primarily formula feed mills with rather complete storage and other facilities for manufacturing and handling formula feeds.

Wholesale Distribution

A total of 168 cooperatives reported that they distributed feed at wholesale in 1959. They provided information on the number and types of their local retail outlets and the types and quantities of feeds supplied to these outlets. Fourteen performed only wholesaling operations, 15 did wholesaling and manufacturing, 62 did wholesaling and retailing, and 77 did all three operations.

Number of Local Retail Outlets Supplied

The local retail outlets of these 168 cooperatives wholesaling feeding included 5,226 local cooperatives and 2,132 private dealer agents (table 21). In addition to these local retail outlets supplied with formula feeds and ingredients, 17 cooperatives reported that they also supplied some wholesale cooperatives with feeds. A number of cooperatives indicated that they sold small quantities of feed at wholesale to accommodate other firms that were temporarily out of a feed or an ingredient.

Types and Quantities of Feeds Distributed

The total amount of feeds that cooperatives distributed at wholesale (including transfers to affiliated retail service stores of three regional cooperatives) was almost 6 million tons in 1959 (table 22). Over two-thirds of this wholesale volume consisted of formula feeds.

Table 21. - *Number of cooperatives wholesaling feeds and local cooperatives and dealer agents supplied with formula feeds and ingredients, 1959*

Geographic division	Number of cooperatives wholesaling feeds	Number of local retail outlets[1]	
		Cooperatives[2]	Private dealer agents
North Atlantic	8	78	333
East North Central	37	965	126
West North Central	66	3,389	916
South Atlantic	4	235	671
South Central	29	388	36
Mountain	8	122	13
Pacific	16	49	37
Total	168	5,226	2,132

[1]According to destination of shipments.
[2]Does not include approximately 440 affiliated retail service stores of 3 regional cooperatives or the retail branch stores or stations of reporting cooperatives.

Table 22. - *Feeds distributed at wholesale by cooperatives, by geographic divisions, 1959*

Geographic division[1]	Distributed at wholesale[2]							
	Formula feeds		Whole and cracked grains		Ingredients[3]		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	990	69.4	92	6.5	344	24.1	1,426	100
East North Central	544	63.8	27	3.1	283	33.1	854	100
West North Central	1,147	74.2	15	1.0	383	24.8	1,545	100
South Atlantic	1,063	84.8	87	6.9	104	8.3	1,254	100
South Central	245	34.2	14	2.0	457	63.8	716	100
Mountain	30	44.1	1	1.5	37	54.4	68	100
Pacific	8	7.2	3	2.8	99	90.0	110	100
Total	4,027	67.4	239	4.0	1,707	28.6	5,973	100

[1] According to destination of shipments.
[2] Includes transfers to affiliated retail service stores of regional cooperatives.
[3] Includes protein meals, grain byproducts, beet pulp, molasses, minerals, and similar feed components.

Ingredients accounted for almost 29 percent and whole and cracked grains for the remainder of 4 percent.

The West North Central area reported more than 1.5 million tons of all feed distributed at wholesale, or almost 26 percent of the total, followed by the North Atlantic area with sales at wholesale of 1.4 million tons, or almost 24 percent of the total.

The West North Central area distributed at wholesale more than 1.1 million tons of formula feeds or 28 percent of the total formula feeds distributed at wholesale.

The North Atlantic area reported slightly more than 38 percent of the volume of whole and cracked grain distributed at wholesale by cooperatives.

The South Central area exceeded other areas in the wholesale distribution of ingredients. Cottonseed meal and hulls were particularly important in this volume.

The volume of formula feeds distributed at wholesale to local cooperatives, wholesale cooperatives, and private dealer agents and other firms is shown in table 23. Sales to local cooperatives, including affiliated retail service stores, accounted for more than three-fourths of the total wholesale distribution of formula feeds. Sales to wholesale cooperatives amounted to almost 1 percent. The remainder went largely to private dealer agents, with a small amount supplied, primarily as an accommodation, to other firms.

Two-thirds of the wholesale volume of whole and cracked grains distributed by cooperatives was supplied to local cooperatives (table 24). Twenty-eight percent was distributed to private dealer agents and to other firms that were

Table 23. - *Formula feeds distributed at wholesale by cooperatives to major outlets by geographic divisions, 1959*

Geographic division[1]	Formula feeds distributed at wholesale to -							
	Local cooperatives[2]		Wholesale cooperatives		Dealer agents and other firms		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	620	62.7	11	1.1	359	36.2	990	100
East North Central	522	96.0	(3)	-	22	4.0	544	100
West North Central	1,056	92.0	11	1.0	80	7.0	1,147	100
South Atlantic	650	61.2	15	1.4	398	37.4	1,063	100
South Central	233	95.1	(3)	-	12	4.9	245	100
Mountain	26	86.7	(3)	-	4	13.3	30	100
Pacific	7	87.5	-	-	1	12.5	8	100
Total	3,114	77.3	37	0.9	876	21.8	4,027	100

[1] According to destination of shipments.
[2] Includes transfers to affiliated retail service stores of regional cooperatives.
[3] Less than 500 tons.

supplied in small amounts, generally as an accommodation. The remaining 5 percent was distributed to wholesale cooperatives.

Figures in table 25 indicate that more than half of the feed ingredients distributed at wholesale by cooperatives went to local cooperatives. Private dealer agents, other firms, and some producers accounted for more than 43 percent of the total ingredients that cooperatives distributed at wholesale. The producers in this group were primarily farmers and ranchers who purchased cottonseed meal in substantial quantities direct from

Table 24. - *Whole and cracked grains distributed at wholesale by cooperatives to major outlets, by geographic divisions, 1959*

Geographic division[1]	Whole and cracked grain distributed at wholesale to -							
	Local cooperatives[2]		Wholesale cooperatives		Dealer agents and other firms		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	62	67.4	5	5.5	25	27.1	92	100
East North Central	21	77.7	4	14.9	2	7.4	27	100
West North Central	13	86.7	(3)	-	2	13.3	15	100
South Atlantic	53	60.9	-	-	34	39.1	87	100
South Central	8	57.1	2	14.3	4	28.6	14	100
Mountain	1	100.0	-	-	(3)	-	1	100
Pacific	2	66.7	-	-	1	33.3	3	100
Total	160	66.9	11	4.7	68	28.4	239	100

[1] According to destination of shipments.
[2] Includes transfers to affiliated retail service stores of regional cooperatives.
[3] Less than 500 tons.

Table 25. - *Ingredients distributed at wholesale by cooperatives to major outlets, by geographic divisions, 1959*

Geographic division[1]	Ingredients distributed at wholesale to -							
	Local cooperatives[2]		Wholesale cooperatives		Dealer agents, other firms, and producers		Total	
	1,000 tons	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*	*1,000 tons*	*Percent*
North Atlantic	207	60.1	-	-	137	39.9	344	100
East North Central	276	97.6	-	-	7	2.4	283	100
West North Central	239	62.4	71	18.6	73	19.0	383	100
South Atlantic	96	92.3	(3)	-	8	7.7	104	100
South Central	52	11.4	6	1.3	399	87.3	457	100
Mountain	10	27.0	(3)	-	27	73.0	37	100
Pacific	4	4.0	9	9.0	86	87.0	99	100
Total	884	51.8	86	5.0	737	43.2	1,707	100

[1]According to destination of shipments.
[2]Includes transfers to affiliated retail service stores of regional cooperatives.
[3]Less than 500 tons.

the cottonseed oil mills. The remainder, amounting to 5 percent of the total, was distributed to wholesale cooperatives.

The 3.1 million tons of formula feeds that wholesale cooperatives distributed to local cooperatives was almost 72 percent of the locals' retail sales of formula feeds (exclusive of the feed they manufactured locally). Only small amounts of whole grains were obtained by local cooperatives through wholesale channels, as large amounts were purchased from local producers.

The 160,000 tons of whole grains that wholesale cooperatives distributed to local cooperatives in 1959 amounted to only 6.5 percent of their retail sales of these grains. Local cooperatives obtained 884,000 tons of ingredients from wholesale cooperatives, representing almost 79 percent of the retail sales of ingredients by the locals. The volume of more than 4 million tons of all feeds local cooperatives obtained from wholesale cooperatives amounted to 52 percent of the locals' retail sales of all feeds (exclusive of feed they manufactured locally).

Retail Distribution and Custom Services

Cooperatives reported the number of local feed stores and warehouses they operated in 1959. They also furnished information on the major types and quantities of feeds they distributed at retail.

Number of Local Feed Stores and Warehouses

Cooperatives operated 5,310 local feed stores and warehouses in 1959 (table 26). The 1,065 local facilities reported by the 56 regional associations shown in the table included the warehouses and feed stores operated by the service stores affiliated with three of the regional farm supply cooperatives. These regionals reported on the manufacturing, wholesaling, and retailing operations of the business systems represented by the regionals and their local service stores.

Table 26. - *Local feed stores and warehouses operated by cooperatives, by geographic divisions, 1959*

Geographic division	Local cooperatives		Regional cooperatives		Total	
	Associations	Local feed stores and warehouses operated[1]	Associations	Local feed stores and warehouses operated[1]	Associations	Local feed stores and warehouses operated[1]
			Number			
North Atlantic	102	139	6	[2]357	108	496
East North Central	867	1,180	7	24	874	1,204
West North Central	1,911	1,978	14	274	1,925	2,252
South Atlantic	94	116	5	[2]251	99	367
South Central	494	545	7	5	501	550
Mountain	127	133	7	35	134	168
Pacific	120	154	10	119	130	273
Total	3,715	4,245	56	1,065	3,771	5,310

[1]According to location. Includes branch stores or warehouses.
[2]Includes local feed stores and warehouses operated by affiliated retail service stores of three regional cooperatives.

Figures in table 27 indicate that farm supply cooperatives operated 2,544, or 48 percent, of these retail facilities. Grain cooperatives operated 2,066, or about 40 percent, of such local feed stores and warehouses.

Types and Quantities of Feeds Distributed

Cooperatives distributed at retail in 1959 almost 12 million tons of feeds (table 28). This retail volume included 7.8 million tons of formula feeds, 2.8 million tons of whole and cracked grains, almost 1.3 million tons of ingredients, and 58,000 tons of hay and other roughages.

On a percentage basis, formula feeds represented more than 65 percent of the total; whole and cracked grains, over 23 percent; feed ingredients, about 11 percent; and hay and other roughages, less than 1 percent.

The West North Central area, with retail sales of feed amounting to more than 3.5 million tons, accounted for almost 30 percent of the total volume distributed at retail by cooperatives. The Mountain area, with 344,000 tons distributed at retail, accounted for the smallest proportion, about 3 percent of the total.

Farm supply cooperatives retailed almost 7.6 million tons of feed, or more than 63 percent of the total retail volume of cooperatives (table 29). Grain cooperatives accounted for more than one-fourth of the cooperative retail distribution.

Dairy, poultry, and all other types of cooperatives each accounted for more than 3 percent of the retail volume. Figures in table 29 indicate that while the tonnage of the dairy and poultry groups was the same amount, there was an important difference between these two groups in the proportions retailed by the local and regional associations.

Table 27. - *Local feed stores and warehouses operated by major types of cooperatives, 1959*

Type of association[1]	Local cooperatives		Regional cooperatives		Total	
	Associations	Local feed stores and warehouses operated	Associations	Local feed stores and warehouses operated	Associations	Local feed stores and warehouses operated
	Number					
Farm supply	1,421	1,763	30	[2]781	1,451	2,544
Dairy	397	398	14	24	411	422
Grain	1,692	1,879	5	187	1,697	2,066
Poultry	20	20	3	48	23	68
Other types	185	185	4	25	189	210
Total	3,715	4,245	56	1,065	3,771	5,310

[1]Classified as to primary or major type of business.
[2]Includes local feed stores and warehouses operated by affiliated retail service stores of three regional cooperatives.

Table 28. - *Feed distributed at retail by cooperatives, by geographic divisions, 1959*

Geographic division[1]	Quantity distributed at retail				
	Formula feeds	Whole and cracked grains	Ingredients	Hay and other roughages	Total
			1,000 tons		
North Atlantic	1,947	231	306	1	2,485
East North Central	1,294	508	334	2	2,138
West North Central	1,832	1,368	300	9	3,509
South Atlantic	838	217	106	10	1,171
South Central	558	219	71	11	859
Mountain	182	82	75	5	344
Pacific	1,181	198	89	20	1,488
Total	7,832	2,823	1,281	58	11,994

[1]By destination of shipments.

Table 29. - *Feed distributed at retail by major types of cooperatives, 1959*

Type of association[1]	Quantity distributed at retail				
	Formula feeds	Whole and cracked grains	Ingredients	Hay and other roughages	Total
			1,000 tons		
Farm supply					
Locals	4,045	961	727	25	5,758
Regionals	1,525	172	134	5	1,836
Total	5,570	1,133	861	30	7,594
Dairy					
Locals	279	17	19	2	317
Regionals	78	2	7	8	95
Total	357	19	26	10	412
Grain					
Locals	1,337	1,361	326	11	3,035
Regionals	25	118	11	-	154
Total	1,362	1,479	337	11	3,189
Poultry					
Locals	58	12	1	-	71
Regionals	255	79	6	1	341
Total	313	91	7	1	412
Other types					
Locals	153	100	49	6	308
Regionals	77	1	1	-	79
Total	230	101	50	6	387
All types					
Locals	5,872	2,451	1,122	44	9,489
Regionals	1,960	372	159	14	2,505
Total	7,832	2,823	1,281	58	11,994

[1]Classified as to primary or major types of business.

Custom Grinding and Mixing

Cooperatives operated a total of 2,908 mills to custom grind and mix feed for their farmer patrons in 1959 (table 30). In the discussion of table 20, we pointed out the amount of formula feeds manufactured in relation to quantity of feeds custom mixed for patrons. This analysis indicated that of the 1,054 mills processing formula feeds, 817 were primarily performing custom mixing for their patrons and each manufactured less than 2,000 tons of formula feeds in 1959.

The 2,908 mills doing custom grinding and mixing in 1959 included 2,786 stationary and 122 mobile mills. They produced complete feeds at the local level from home or locally grown grains by supplementing the grain with premixed concentrates carrying the necessary proteins, vitamins, minerals, and other additions to make nutritionally balanced feeds.

Of these 2,908 mills, 1,948 were performing custom operations only and did no manufacturing of formula feeds in 1959. The volume of feed they custom mixed amounted to more than 3.1 million tons.

Cooperatives custom ground over 6.4 million tons and custom mixed almost 5.8 million tons of feed in the 2,786 stationary mills they operated. In their 122 mobile mills, they custom ground 277,000 tons and custom mixed 313,000 tons of feed. Thus, total production from both stationary and mobile mills amounted to more than 6.7 million tons of feed custom ground and almost 6.1 million tons of feed custom mixed. Some associations that did custom grinding reported that their mills were not equipped to mix feed. Over 82 percent of the total custom grinding done by cooperatives for their patrons was centered in the North Central States of which 42 percent was in the East North Central and 40 percent in the West North Central areas.

Farm supply cooperatives custom ground almost 3 million tons of feed

Table 30. - *Number of stationary and mobile mills operated for custom grinding and mixing, and quantity of feed custom ground and mixed by cooperatives, 1959*

Geographic division	Stationary mills			Mobile mills			Total		
	Number	Feed ground	Feed mixed	Number	Feed ground	Feed mixed	Number	Feed ground	Feed mixed
		1,000 tons	*1,000 tons*		*1,000 tons*	*1,000 tons*		*1,000 tons*	*1,000 tons*
North Atlantic	330	331	701	42	80	126	372	411	827
East North Central	1,013	2,780	2,704	33	78	75	1,046	2,858	2,779
West North Central	982	2,584	1,561	42	115	107	1,024	2,699	1,668
South Atlantic	228	270	372	3	4	5	231	274	377
South Central	132	357	363	1	(1)	(1)	133	357	363
Mountain	55	64	26	1	(1)	(1)	56	64	26
Pacific	46	46	37	-	-	-	46	46	37
Total	2,786	6,432	5,764	122	277	313	2,908	6,709	6,077

[1]Less than 500 tons.

and custom mixed about 3.6 million tons. This represented 44 percent of all custom grinding by cooperatives and 59 percent of the custom mixing. As might have been expected, grain cooperatives were important in custom operations, doing about 52 percent of the custom grinding and 37 percent of the custom mixing.

In all commodity groups, local cooperatives were more important in custom operations than the regionals. In the farm supply group, locals accounted for about 90 percent of the custom grinding and over 90 percent of the custom mixing. In the grain category, locals were even more important in custom operations, doing about 98 percent of the custom grinding and 99 percent of the custom mixing by this group. For all types of associations, the locals accounted for 6.3 million tons, or 94 percent, of the feed custom ground and for 5.7 million tons, or 93 percent, of the feed custom mixed by cooperatives in 1959.

Cooperatives furnished information on the amount of grain they custom ground that was first stored under "grain-bank" plans. Usually, under these grain bank plans farmer members haul grain to their cooperative feed mills when it is convenient for them to do so. It is generally understood that each farmer will keep grain deposited with the feed mill so that he has some "on deposit" for most of the feeding year. For practical reasons, the identity of each patron's grain in the bins is not kept separate.

Generally, too, it is understood that grain withdrawn from the grain bank will be in the form of mixed feed and that the mixing and grinding services, as well as added supplements, will be provided by the cooperative. Some associations limit the amount of grain that may be deposited in the grain bank at any one time. In some arrangements, a charge is made for storage service. Drying charges are made where drying is necessary.

In those cases where the patron does not haul his grain to the feed mill from the farm, the cooperative usually charges for this service. Similarly, the cooperative usually charges for delivering the feed from the mill to the farm. However, such charges for hauling and delivery vary widely.

Replies to the question asking for the amount of grain first stored in the grain bank before being custom ground indicated that there was a misunderstanding on the part of some respondents regarding the term "grain bank." Also, some associations failed to supply this information. However, for the central area of the United States where this program is better known and where the data appear to be relatively complete, the response is shown in the accompanying tabulation. No estimates are included for nonreporting associations.

Geographic division	Grain custom ground	Grain first stored in "grain bank"	
	1,000 tons	*1,000 tons*	*Percent*
East North Central	2,780	260	9.4
West North Central	2,519	162	6.4
South Central	357	19	5.3

Warehousing and Delivery

To supply more complete information on the facilities operated by cooperatives in distributing feeds, they furnished data on the number of bagged feed warehouses and bulk loading stations operated, the bulk storage capacity maintained for finished feeds, and the types of delivery trucks operated and quantities of feeds delivered in them

Warehouses for Sacked Feeds

Cooperatives reported that they operated a total of 992 warehouses, other than at their mills, for sacked feeds in 1959 (table 31). Regional cooperatives, including three regionals that reported for their wholesale and retail business systems operated 704 and local associations 288 of these warehouses. A total of 892 warehouses were used for retailing feed; 63 were operated for both wholesaling and retailing, and 37 were used exclusively for wholesaling feed.

The farm supply cooperatives, with a total of 583, operated almost three-fifths of these feed warehouses. Grain cooperatives were next in the number of feed warehouses operated, with a total of 340. Two poultry regionals operated 44 feed warehouses. Dairy and other types of cooperatives operated 25.

Bulk Feed Loading Facilities

Cooperatives operated a total of 1,027 bulk feed loading stations at their mills in 1959 (table 32). Of this number, 943 were operated for retailing feed, 45 for wholesaling only, and 39 for both operations. The combined finished feed storage capacity of these facilities was more than 63,000 tons. The cooperatives used over 5,000 tons of the capacity for wholesaling, 55,000 tons for retailing, and almost 3,000 tons for both operations.

Cooperatives also operated 117 bulk feed transfer or relay stations (table 33) at points usually 100 miles or more from the mills. These are bulk feed receiving, storage, and loading facilities from which bulk feed can be trucked

Table 31. - *Warehouses*[1] *for sacked feed operated by cooperatives, by geographic divisions, 1959*

Geographic division	Number of warehouses operated for -			Total
	Wholesaling	Retailing	Both retailing and wholesaling	
North Atlantic	2	114	6	122
East North Central	12	116	10	138
West North Central	18	307	36	361
South Atlantic	5	220	-	225
South Central	-	5	4	9
Mountain	-	16	2	18
Pacific	-	114	5	119
Total	37	892	63	992

[1]Other than at mills.

Table 32. - *Number of mills with bulk loading facilities at mills and storage capacity for bulk finished feeds, by geographic areas, 1959*

Geographic area	Number of mills	Storage capacity for bulk finished feeds
		Tons
North Atlantic	144	16,506
East North Central	408	13,932
West North Central	333	18,397
South Atlantic	34	2,326
South Central	40	2,203
Mountain	23	1,913
Pacific	45	7,921
Total	1,027	63,198

out to farms at the local level. The combined bulk storage capacity of these facilities was more than 9,000 tons of finished feeds. Over 1,400 tons of this capacity was used for wholesaling, over 7,200 for retailing, and less than 400 tons for both operations.

Feed Delivery

Cooperatives supplied information on the number of trucks they operated for wholesale and retail distribution and for sacked and bulk feeds. They also supplied information on the quantities of feeds delivered at wholesale and retail in these trucks as well as the quantities delivered in sacked and bulk form.

Number and Types of Delivery Trucks

The number of feed delivery trucks operated by cooperatives amounted to 6,400 (table 34). Of these, 4,412 were used for delivery of sacked feeds. Another 1,060 were operated as combination sacked and bulk feed delivery trucks and 928 were used for delivering bulk feed only.

The figures in table 34 also show that 5,923 of these delivery trucks were

Table 33. - *Number of bulk relay stations and storage capacity, by geographic areas, 1959*

Geographic area	Number of bulk relay stations	Storage capacity
		Tons
North Atlantic	7	512
East North Central	51	2,970
West North Central	37	1,193
South Atlantic	3	400
South Central	3	1,720
Mountain	4	49
Pacific	12	2,240
Total	117	9,084

Table 34. - *Delivery trucks for feed operated by cooperatives, by geographic divisions, 1959*

Geographic division	Number of trucks operated															
	For wholesaling				For retailing				For wholesaling and retailing				Total			
	Sacked feed	Sacked and bulk feed	Bulk feed	Total	Sacked feed	Sacked and bulk feed	Bulk feed	Total	Sacked feed	Sacked and bulk feed	Bulk feed	Total	Sacked feed	Sacked and bulk feed	Bulk feed	Total
North Atlantic	2	2	2	6	471	254	66	791	15	8	2	25	488	264	70	822
East North Central	43	2	7	52	1,541	316	210	2,067	22	7	4	33	1,606	325	221	2,152
West North Central	114	29	8	151	1,118	251	336	1,705	62	22	8	92	1,294	302	352	1,948
South Atlantic	5	-	27	32	426	43	30	499	-	-	-	-	431	43	57	531
South Central	14	1	1	16	280	45	42	367	22	4	-	26	316	50	43	409
Mountain	2	1	-	3	56	21	9	86	12	8	-	20	70	30	9	109
Pacific	1	1	-	2	195	40	173	408	11	5	3	19	207	46	176	429
Total	181	36	45	262	4,087	970	866	5,923	144	54	17	215	4,412	1,060	928	6,400

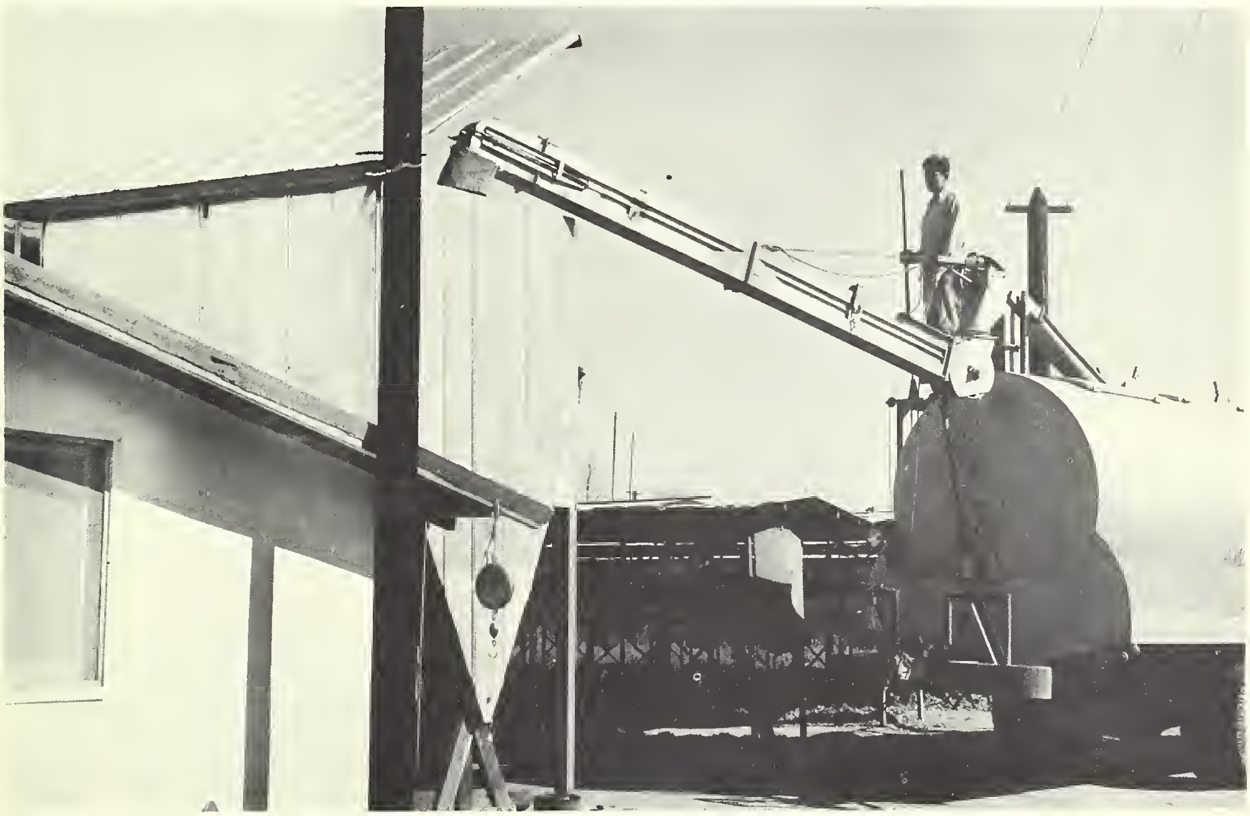
used for retailing feed, with another 215 used for both wholesaling and retailing. Delivery trucks for wholesaling amounted to 262.

Farm supply associations, with 4,115 feed delivery trucks, accounted for more than three-fifths of the total number operated by cooperatives. Grain cooperatives operated 1,813 and the remainder of less than 500 trucks was operated by dairy, poultry, and other types of cooperatives.

Quantities of Feeds Delivered

The total amount of feed delivered in cooperative trucks was 6.4 million tons (table 35). About 3.2 million tons were in sacks, representing almost one-half of the total amount delivered. Over 2.9 million tons were delivered in straight bulk form, and 267,000 tons were delivered to farmer patrons in sacks and then transferred at the farm to the farmer's bulk bins. Over 5.6 million tons of the total tonnage delivered was at retail and 745,000 tons at wholesale.

Cooperatives have had an important influence on the trend toward bulk feed operations. They have encouraged the construction and use of bulk bins by their farmer patrons in their feeding operations. The figures in table 35 indicate that the largest amount of feed delivered in straight bulk was in the Pacific area. This was a reflection of the extent of bulk feed handling in poultry feeding operations in an area where cooperatives serving poultry producers were of major importance.



Bulk feed is being transferred from cooperative truck to farmer's bin.

Table 35. - *Volume of feed delivered by cooperatives' trucks, by geographic divisions, 1959*

Geographic division	Feed delivered in associations' trucks at -											
	Wholesale				Retail				Retail and wholesale			
	In sacks	Bagged to bulk[1]	In straight bulk	Total	In sacks	Bagged to bulk[1]	In straight bulk	Total	In sacks	Bagged to bulk[1]	In straight bulk	Total
	1,000 tons											
North Atlantic	1	(2)	10	11	793	120	606	1,519	794	120	616	1,530
East North Central	181	(2)	23	204	660	24	347	1,031	841	24	370	1,235
West North Central	202	-	73	275	584	16	569	1,169	786	16	642	1,444
South Atlantic	4	(2)	214	218	303	7	156	466	307	7	370	684
South Central	24	-	(2)	24	175	13	98	286	199	13	98	310
Mountain	8	-	-	8	44	1	23	68	52	1	23	76
Pacific	2	-	3	5	190	86	814	1,090	192	86	817	1,095
Total	422	(2)	323	745	2,749	267	2,613	5,629	3,171	267	2,936	6,374

[1]In sacks and transferred to farmers' bulk bins.
[2]Less than 500 tons.

Farm supply cooperatives accounted for almost 4.5 million tons, or 70 percent, of the 6.4 million delivered in cooperative trucks. Grain cooperatives, with more than 1.1 million tons delivered in their trucks, accounted for more than 17 percent of the feed delivered by cooperatives.

Feed Financing

The volume of feed financed by cooperatives under various financing plans amounted to $108.5 million (table 36). A major part of this financing was accomplished through seasonal, long-term, or contract financing of two types.

Under one of these arrangements, the title of the poultry or livestock being fed remained with the grower. Figures in table 36 show that the value of feed financed under this plan by 191 cooperatives amounted to almost $41.3 million in 1959.

Under the other type of long-term plan, title of the livestock or poultry remained with the cooperatives furnishing the feeds. Feed financed under it by 84 cooperatives amounted to nearly $54.5 million.

Thus, the total value of feed financed under such seasonal, long-term, or contract plans was more than $95.7 million, with 43 percent going to farmers who retained title to the poultry or livestock fed and 57 percent to farmers in contract programs where title remained with the cooperatives.

Another arrangement for financing feed was through affiliated credit corporations or associations, usually organized as subsidiaries. These credit corporations raised their original capital through the parent cooperative or by selling stock to farmers or other cooperatives. Credit corporations that financed farmers directly obtained funds by rediscounting farmers' notes with the Federal intermediate credit banks, or borrowed from these banks as well as from other sources. Credit corporations that financed local cooperatives borrowed from the banks for cooperatives.

Feed sales financed through such credit corporations or associations by 79 cooperatives had a value of almost $4.9 million.

Some farm supply and marketing cooperatives used rural credit unions to assist their members with credit needs. The value of feed financed through affiliated credit unions in 1959 was $503,000. Such financing arrangements through rural credit unions occurred primarily in the East North Central and West North Central areas. In only one other geographic area did a cooperative report feed financing through a rural credit union.

Loans wholly or partially guaranteed to local banks or production credit associations by cooperatives in financing their feed sales amounted to $6.1 million in 1959. Under these arangements the production credit associations or banks were guaranteed against loss on such loans by the cooperatives making the feed sales to their patrons. Such plans permitted patrons who needed credit to arrange for it at the time they bought their feed requirements.

Table 36. - *Volume of feed sales financed by cooperatives, 1959*

Geographic division	Number of associations reporting and volume of feed sales financed under plan specified -															
	Seasonal, long-term, or contract financing						Loans by an affiliated credit corporation or association		Loans by an affiliated rural credit union		Loans wholly or partially guaranteed by cooperatives to local banks or production credit associations		Other financing plans		Total	
	Title of poultry or livestock remained with grower		Title of poultry or livestock remained with cooperative		Total											
	Number	*$1,000*	*Number*	*$1,000*	*Number*[1]	*$1,000*	*Number*	*$1,000*	*Number*	*$1,000*	*Number*	*$1,000*	*Number*	*$1,000*	*Number*[1]	*$1,000*
North Atlantic	6	2,469	11	4,156	15	6,625	3	243	-	-	9	115	2	91	22	7,074
East North Central	70	2,796	26	1,813	86	4,609	53	2,428	10	343	81	2,159	8	200	168	9,739
West North Central	83	9,895	10	668	88	10,563	14	816	12	95	47	2,045	15	984	137	14,503
South Atlantic	5	4,345	15	42,949	16	47,294	-	-	-	-	4	172	1	25	17	47,491
South Central	13	2,389	15	3,244	21	5,633	6	1,024	-	-	11	1,200	-	-	27	7,857
Mountain	4	619	1	325	5	944	1	20	-	-	-	-	-	-	6	964
Pacific	10	18,758	6	1,307	13	20,065	2	330	1	65	3	400	-	-	15	20,860
Total	191	41,271	84	54,462	244	95,733	79	4,861	23	503	155	6,091	26	1,300	392	108,488

[1]Adjusted for duplication.

Under various other plans feed sales amounting to $1.3 million were financed by cooperatives. These plans were usually special arrangements set up by each of the respondent cooperatives to handle the credit needs of their patrons in purchasing feed for their livestock and poultry.

Figures in appendix tables 2 and 3 show the volume of feed financed by individual cooperatives under each of the major types of financing plans just discussed.

Of the 191 associations that financed feed sales through seasonal, long-term, or contract plans in which the title of livestock or poultry remained with the producer, 133 reported a volume of feed financed under $50,000 (appendix table 2). All but two of these associations financed feed directly to farmers. These two financed feed sales to or through local cooperatives. Eight associations reported financing a feed volume of $1 million or more. Six of these financed feed sales directly to farmers and two made loans to or through local cooperatives.

Similarily, of the 84 associations reporting on seasonal, long-term, or contract plans in which the title of the poultry or livestock remained with the cooperative, 44, or slightly more than half, reported a volume of feed financed of less than $50,000. Six of the 84 associations reporting on this plan financed a feed volume of $1 million or more. Four of these financed feed directly to farmers and two made arrangements for loans to or through local cooperatives.

Figures in appendix table 3 indicate that 63 of the 79 associations that made loans through an affiliated credit corporation or association reported the volume represented by these loans was under $50,000. No cooperative reported a volume of $1 million or more under this financing plan.

All but 2 of the 23 cooperatives reporting loans by affiliated rural credit unions financed sales of feed amounting to less than $50,000.

Of the 155 cooperatives reporting loans wholly or partially guaranteed to local banks or production credit associations, 130 reported the volume of feeds so financed was under $50,000. Three associations reported a volume of feed financing ranging from $500,000 up to $1 million, but none reported $1 million or more.

Twenty of the 26 cooperatives that had miscellaneous types of financing plans reported the volume of feed financed was under $50,000 and no association reported $1 million or more.

Summary of Extent of Integration

The analysis of feed operations of farmer cooperatives in 1959 provided quantitative data for 4,232 cooperatives. Of these, 1,940, or more than 45 percent, were located in the West North Central area and 882, or one-fifth, were in the East North Central area.

A total of 821 of the entire group of associations manufactured feed. Of this number, 77 also wholesaled and retailed feed; 15 also wholesaled feed and 726 also retailed feed in addition to manufacturing formula feeds. Only three were strictly feed manufacturing associations.

Another 62 associations wholesaled and retailed feed, but did not manufacture formula feeds; 14 just wholesaled feed; and 3,335 only retailed feed. Thus, a total of 168 cooperatives wholesaled feed and 4,200 retailed feed.

Manufacturing

The 821 manufacturing cooperatives operated 1,054 mills for the production of formula feeds in 1959. Their total production amounted to a little more than 7 million tons (figure 2). The North Atlantic area accounted for 24 percent and the West North Central area for almost 22 percent of this total cooperative production. The South Central and Mountain areas, on the other hand, each produced only about 2 percent of the total manufactured by cooperatives.

This volume of more than 7 million tons of formula feeds manufactured by cooperatives was equal to almost 90 percent of the 7.8 million tons of formula feeds they retailed in 1959.

Only the 165 mills that manufactured 5,000 tons or more of formula feeds a year produced an average volume of formula feeds that exceeded their average volume of custom mixed feeds. This would mean that 5,000 tons a year should be considered the minimum volume in determining the number of mills that were primarily manufacturing formula feeds. These 165 mills manufactured 6.2 million tons of formula feeds in 1959, representing 89 percent of the total production of formula feeds by cooperatives. Seventeen of the mills in this group that manufactured 5,000 tons or more a year produced 3.3 million tons of formula feeds, or 47 percent of the total manufactured by cooperatives.

Poultry feeds accounted for more than 3.7 million tons, or 53 percent, of this cooperative production of formula feeds; livestock feeds for 3 million tons, or almost 43 percent of the total; and miscellaneous feeds for 283,000 tons, or 4 percent of the total. The combined production by cooperatives of poultry and livestock feeds amounted to almost 24 percent of the total United States production of these feeds as reported in the 1958 Census of Manufactures.

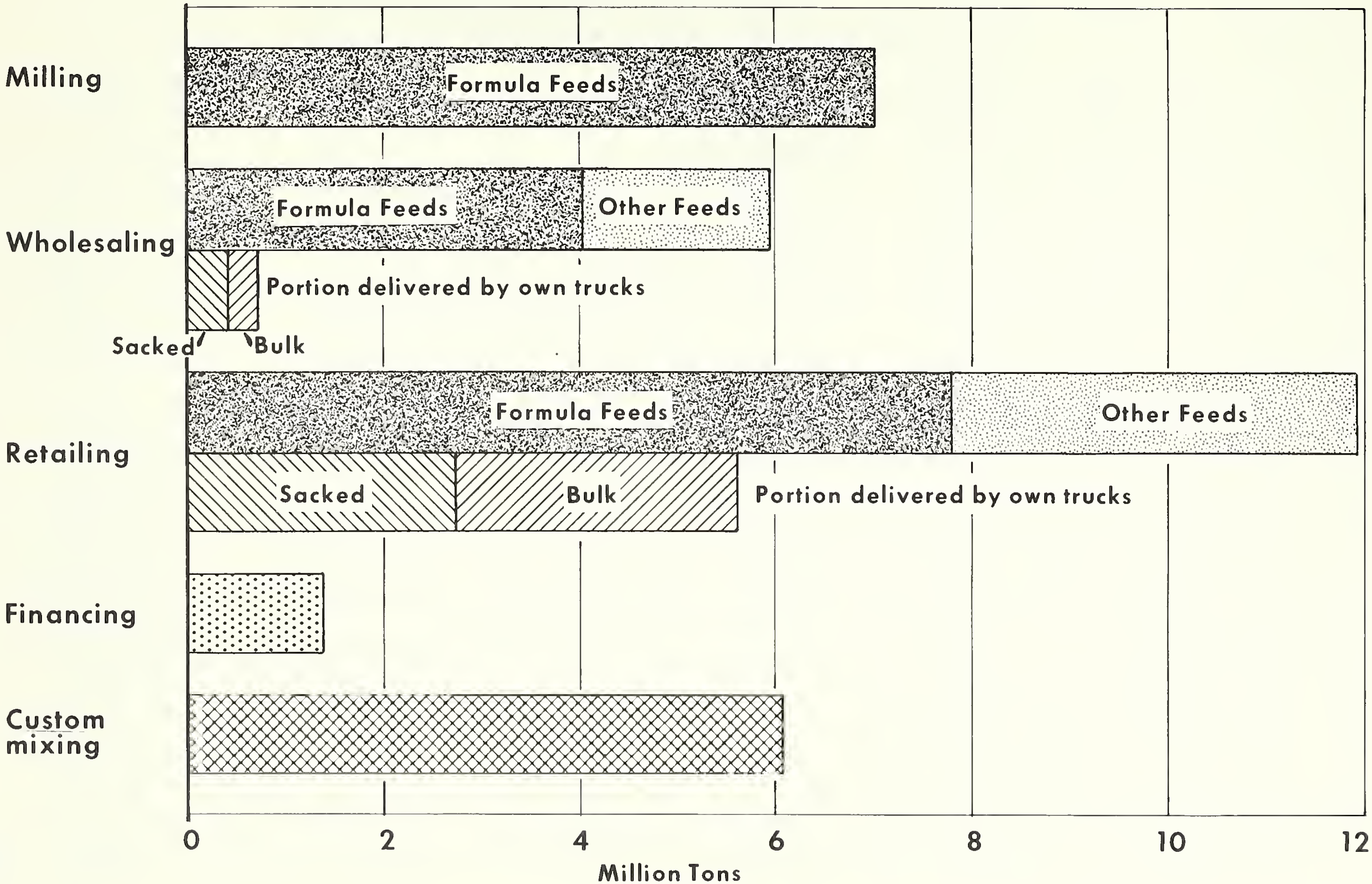
Poultry feeds represented more than three-fourths of the total cooperative production of formula feeds in the South Atlantic and Pacific areas and almost 64 percent in the Mountain area. Livestock feeds, on the other hand, represented three-fifths or more of total formula feed production of cooperatives in the West North Central and South Central States.

More than 66 percent of the cooperative production of formula feeds was in the form of mashes; 32 percent was pellets and crumbles; and 1.5 percent was scratch feeds. The highest proportion in pellets and crumbles was manufactured in the South Atlantic area where about one-half was in this form. Cooperatives in the North Atlantic area produced only about 22 percent of their formula feeds as pellets or crumbles.

On the basis of reported data, about 15 percent of the total feed manufactured was produced as concentrates or supplements and 85 percent as complete feeds. In the East North Central and West North Central areas about one-fourth of the total was produced as concentrates or supplements, but in the Mountain area less than 1 percent was produced as these types.

Figure 2

Integration in Feed Operations of Farmer Cooperatives, 1959



About 93 percent of all formula feeds manufactured by cooperatives were mixed from basic ingredients and 7 percent were manufactured with the use of pre-mixed concentrates. The East North Central and Mountain areas indicated the highest proportions manufactured with the use of pre-mixed concentrates, with 18 percent and 12 percent, respectively.

Cooperatives reported that 62 percent of the feeds they manufactured were shipped from their mills by truck and 38 percent by rail. Forty-six percent of their truck shipments and only 17 percent of their rail shipments left the mill in bulk form. Of all shipments from cooperative mills, both rail and truck, over 34 percent were made in bulk. The highest proportion shipped in bulk was on the Pacific Coast, where 67 percent of the formula feed shipments left the cooperative mills in bulk.

Wholesaling

A total of 168 cooperatives distributed almost 6 million tons of feed at wholesale in 1959 (figure 2). Retail outlets for this wholesale volume included 5,226 independent local cooperatives, approximately 440 affiliated retail service stores of 3 regional cooperatives, and 2,132 dealer agents. The wholesale volume included 4 million tons of formula feeds and almost 2 million tons of other feeds. Wholesale cooperatives supplied over 70 percent of the formula feeds that retail cooperatives obtained through wholesale channels (exclusive of feed they manufactured locally).

The West North Central area reported more than 1.5 million tons of feed distributed at wholesale, or almost 26 percent of the total, followed by the North Atlantic area with sales at wholesale of 1.4 million tons, or almost 24 percent of the total. Cooperatives in the Mountain area wholesaled 68,000 tons, or only slightly more than 1 percent of the total wholesale distribution of feeds by cooperatives.

Retailing

Cooperatives operated 5,310 local feed stores and warehouses in 1959. They distributed through these retail facilities almost 12 million tons of feed (figure 2). This volume included over 7.8 million tons of formula feeds, over 2.8 million tons of whole and cracked grain, almost 1.3 million tons of ingredients, and 58,000 tons of hay and other roughages.

The West North Central area, with retail sales of feed amounting to more than 3.5 million tons, accounted for almost 30 percent of the total volume distributed at retail by cooperatives. The Mountain area, with 344,000 tons distributed at retail, accounted for the smallest proportion, about 3 percent of the total.

Cooperatives operated 2,908 mills for custom grinding and mixing. Of this number, 2,786 were stationary and 122 were mobile mills. These mills custom ground over 6.7 million tons and custom mixed almost 6.1 million tons of feed in 1959. Over 82 percent of the total custom grinding done by cooperatives for their patrons was in the North Central States -- about equally divided between the Eastern and Western area.

Warehousing and Delivery

Cooperatives operated 992 feed warehouses for sacked feeds other than those at their mills in 1959. Of these, 892 were used for retailing, 63 for both wholesaling and retailing, and 37 for wholesaling only.

Other facilities included 1,027 bulk feed loading stations at their mills. The combined storage capacity of these 1,027 bulk feed loading stations was more than 63,000 tons of finished feeds. In addition, cooperatives operated 117 bulk feed transfer or relay stations at points usually 100 miles or more from the mills. The combined storage capacity of these transfer or relay stations was more than 9,000 tons.

For delivery of the feeds they handled, cooperatives operated 6,400 trucks. A total of 4,412 of these trucks was used for sacked feed, 928 for bulk feed, and 1,060 for a combination of sacked and bulk feed delivery.

Of the 6,400 feed delivery trucks, 5,923 were used for retailing feed, 262 for wholesaling only, and 215 for both retailing and wholesaling feed.

Cooperative deliveries at wholesale amounted to 745,000 tons, or more than 12 percent of their total wholesale volume of almost 6 million tons. Of these deliveries at wholesale, 57 percent was in sacks and 43 percent in bulk.

Cooperatives delivered to farmers over 5.6 million tons of feed, or about 47 percent of the total volume of almost 12 million tons that cooperatives retailed. Of these deliveries, 46 percent was in bulk and 54 percent in sacks. The largest amount of feed delivered in straight bulk was in the Pacific area.

Financing

Cooperatives financed about $96 million worth of feed under seasonal, long-term, or contract programs. The value of feed financed by 191 cooperatives under programs in which the title of poultry or livestock remained with the grower amounted to $41.3 million in 1959, or 43 percent of the total financed under such seasonal, long-term, or contract programs. Under the other type of long-term plan in which title of the livestock or poultry remained with the cooperatives, the value of the feed financed was almost $54.5 million, or 57 percent of the feed financed under these contract programs.

Feed sales financed through affiliated credit corporations or associations by 79 cooperatives had a value of almost $4.9 million. Feed financed through affiliated credit unions amounted to $503,000. Loans wholly or partially guaranteed to local banks or production credit associations by cooperatives in financing their feed sales amounted to $6.1 million. Under various other plans, feed sales amounting to $1.3 million were financed by cooperatives.

The total volume of feed sales financed by cooperatives in 1959 amounted to an estimated 1.4 million tons (figure 2), or almost one-fifth of the total volume of formula feed retailed by cooperatives.

Appendix

Appendix table 1. - *Formula feeds manufactured by major types of cooperatives, 1959*

Type of association	Formula feeds manufactured			
	Poultry[1]	Livestock[2]	Miscellaneous	Total
	1,000 tons			
Farm supply:				
Locals	647	290	13	950
Regionals	2,542	2,098	246	4,886
Total	3,189	2,388	259	5,836
Dairy:				
Locals	8	31	(3)	39
Regionals	98	123	1	222
Total	106	154	1	261
Grain:				
Locals	143	258	17	418
Regionals	39	100	2	141
Total	182	358	19	559
Poultry:				
Locals	44	6	-	50
Regionals	197	45	3	245
Total	241	51	3	295
Other types:				
Locals	8	56	1	65
Regionals	(3)	(3)	-	(3)
Total	8	56	1	65
All types:				
Locals	850	641	31	1,522
Regionals	2,876	2,366	252	5,494
Total	3,726	3,007	283	7,016

[1] Includes broiler, turkey and other poultry feeds.
[2] Includes dairy, hog, beef, and sheep feeds.
[3] Less than 500 tons.

Appendix table 2. - *Volume of cooperative feed sales financed by seasonal, long-term, or contract plans, 1959*

Geographic division	Number of cooperatives indicating specified volume of feed financed -										
	Direct to farmers					To or through local associations					Total
	Under $50,000	$50,000-99,999	$100,000-499,999	$500,000-999,999	$1,000,000 and over	Under $50,000	$50,000-99,999	$100,000-499,999	$500,000-999,999	$1,000,000 and over	Number of associations[1]
	Title of livestock or poultry remained with producer										
North Atlantic	1	-	2	1	-	-	-	1	-	1	6
East North Central	54	13	1	-	-	-	1	1	-	-	70
West North Central	59	9	6	2	3	2	-	3	-	-	83
South Atlantic	2	1	1	-	1	-	-	-	-	-	5
South Central	9	1	2	-	-	-	-	-	-	1	13
Mountain	2	-	1	1	-	-	-	-	-	-	4
Pacific	4	1	3	-	2	-	-	-	-	-	10
Total	131	25	16	4	6	2	1	5	-	2	191
	Title of livestock or poultry remained with cooperative										
North Atlantic	4	3	2	1	1	-	-	1	-	-	11
East North Central	18	6	1	1	-	-	-	-	-	-	26
West North Central	8	1	-	1	-	-	-	-	-	-	10
South Atlantic	3	2	7	-	2	-	-	-	-	2	15
South Central	7	2	4	2	-	-	-	-	-	-	15
Mountain	-	-	1	-	-	-	-	-	-	-	1
Pacific	4	-	1	-	1	-	-	-	-	-	6
Total	44	14	16	5	4	-	-	1	-	2	84

[1]Adjusted for duplication.

Appendix table 3. - *Volume of cooperative feed sales financed through credit agencies, 1959*

Geographic division	Number of cooperatives indicating specified volume of feed financed direct to farmers -									
	Under $50,000	$50,000-99,999	$100,000-499,999	$500,000-999,999	$1,000,000 and over	Under $50,000	$50,000-99,999	$100,000-499,999	$500,000-999,999	$1,000,000 and over
	Loans by an affiliated credit corporation or association					Loans by an affiliated rural credit union				
North Atlantic[1]	1	-	2	-	-	-	-	-	-	-
East North Central	44	7	2	-	-	9	-	1	-	-
West North Central[2]	12	-	1	1	-	12	-	-	-	-
South Atlantic	-	-	-	-	-	-	-	-	-	-
South Central	5	-	-	1	-	-	-	-	-	-
Mountain	1	-	-	-	-	-	-	-	-	-
Pacific	-	-	2	-	-	-	1	-	-	-
Total	63	7	7	2	-	21	1	1	-	-
	Loans wholly or partially guaranteed to local banks or production credit associations					Other types of financing				
North Atlantic[1]	8	1	-	-	-	1	1	-	-	-
East North Central	75	3	2	1	-	6	1	1	-	-
West North Central	39	3	4	1	-	12	1	1	1	-
South Atlantic	2	1	1	-	-	1	-	-	-	-
South Central	5	4	1	1	-	-	-	-	-	-
Mountain	-	-	-	-	-	-	-	-	-	-
Pacific	1	-	2	-	-	-	-	-	-	-
Total	130	12	10	3	-	20	3	2	1	-

[1]In addition to number of associations shown reporting loans direct to farmers, two associations also made loans to or through local associations by an affiliated credit corporation and one other association made loans to or through local associations by another plan.
[2]One association also made loans to or through local associations by an affiliated credit corporation.

(QUESTIONNAIRES USED IN THE STUDY
(Include slight revisions, based on reporting by cooperatives, that should improve clarity and accuracy if used in future studies.)

Form I

BUDGET BUREAU NO. 40 - 59137
APPROVAL EXPIRES AUGUST 31, 1960

UNITED STATES DEPARTMENT OF AGRICULTURE
FARMER COOPERATIVE SERVICE
WASHINGTON, D. C.

FEED DISTRIBUTION AND MANUFACTURING BY FARMER COOPERATIVES

Cooperative ____________________

Address ____________________

For Your Fiscal Year Ended ________, 1959

I. RETAIL DISTRIBUTION

1. Local feed stores and warehouses your association operated......(number) ________

2. Volume of feeds you sold at retail (estimate if data are not available):

   (a) Formula feeds (including mixed feeds, concentrates, supplements and scratch feeds)..(tons) ________

   (b) Whole and cracked grains....................................(tons) ________

   (c) Ingredients[1]...(tons) ________

   (d) Hay and other roughages....................................(tons) ________

3. Retail feed delivery trucks your association operated:

   (a) Sacked feed delivery trucks...............................(number) ________

   (b) Combination sacked and bulk feed delivery trucks...........(number) ________

   (c) Bulk feed delivery trucks.................................(number) ________

4. Volume of retail feeds delivered by your association's trucks:

   (a) In sacks...(tons) ________

   (b) In sacks and transferred to farmers' bulk bins (bag to bulk)..(tons) ________

   (c) In straight bulk...(tons) ________

5. Retail bulk feed loading stations operated by your association:

   (a) Bulk truck loading stations at mills.......................(number) ________

   (b) Bulk feed transfer or relay stations (often 50 to 100 miles from mill).....................................(number) ________

6. Bulk storage capacity for finished feeds for retail distribution:

   (a) At mills...(tons) ________

   (b) At bulk feed transfer or relay stations.....................(tons) ________

7. Stationary mills operated by your association for <u>custom</u> grinding and mixing...(number) ________

   (a) Volume custom ground[2]..(tons) ________

      (1) Proportion of above, if any, that was first stored in your "grain bank" program ________%

   (b) Volume custom mixed...(tons) ________

[1] Include all other feeds such as protein meals, grain by-products, beet pulp, molasses, minerals, and the like.
[2] Include only quantity actually ground. Do not include ground feeds merely fed through the grinder.

8. Mobile mills operated by your association for <u>custom</u> grinding and mixing..(number) ________

   (a) Volume custom ground[1]....................................(tons) ________

   (b) Volume custom mixed..(tons) ________

II. WHOLESALING AND MANUFACTURING

1. Do you wholesale any feed to other cooperatives or firms?...Yes ______ No ______
   If yes, total tons wholesaled in fiscal year 19__: ________
2. Do you manufacture any formula or mixed feeds:
   (a) With equipment used for custom mixing?..................Yes ______ No ______
   If yes, total tons manufactured in fiscal year 19__: ________
   (b) In a separate mill?.......................................Yes ______ No ______
   If yes, total tons manufactured in fiscal year 19__: ________

III. FEED FINANCING

Volume of feed sales financed during last fiscal year under each of the plans listed below. Exclude regular accommodation credit, such as 30 days, (estimate if data cannot easily be compiled.)

Type of plan	Direct to farmers
1. Seasonal, long-term, or contract feed financing:	
(a) Title of poultry or livestock remained with grower..........	$________
(b) Title remained with cooperative............................	________
2. Loans by an affiliated credit corporation or association........	________
3. Loans by an affiliated rural credit union......................	________
4. Loans you wholly or partially guaranteed to local banks or PCA's	________
5. Other (describe)________________________________	________

[1]Include only quantity actually ground. Do not include ground feeds merely fed through the grinder.

Form II

BUDGET BUREAU NO. 40 - 6006
APPROVAL EXPIRES AUGUST 31, 1960

UNITED STATES DEPARTMENT OF AGRICULTURE
FARMER COOPERATIVE SERVICE
WASHINGTON, D. C.

FEED DISTRIBUTION AND MANUFACTURING BY FARMER COOPERATIVES

Cooperative ____________________

Address ____________________

For Your Fiscal Year Ended ________, 1959

I. MANUFACTURING (Include wholly owned subsidiaries but exclude feed mills owned jointly with other cooperatives and output taken from them.)

1. Mills operated (for manufacture of your own formula feeds) (number) ________

2. Capacity of your mill or mills (list each mill separately):

Type of feed	Mill locations				
	________	________	________	________	________
	(Tons per hour capacity)				
Formula feeds					
Scratch feeds[1]					
Pellets					
Crumbles					

3. (a) Formula feeds manufactured in last fiscal year (using either straight ingredients or pre-mix concentrates): Estimate where necessary. Exclude all custom mixing here.

Type of feed	Mashes Tons	Pellets and crumbles Tons	Scratch feeds Tons	Total Tons
Broiler				
Turkey				
Other poultry				
Dairy			xxxxxxxxx	
Hog			xxxxxxxxx	
Beef and sheep			xxxxxxxxx	
Miscellaneous				
Total				

(b) What percent of the total of each type of formula feed shown in 3(a) above did you manufacture as a pre-mix concentrate (to be mixed with other ingredients or as supplements to be fed with homegrown grains)? (Estimate)

Type of feed	Percent
Broiler	
Turkey	
Other poultry	
Dairy	
Hog	
Beef and sheep	
Miscellaneous	

[1] If separate from formula feed mixing line.

(Over)

(c) If you used a pre-mix concentrate (other than a vitamin or mineral pre-mix) as a base in the manufacture of feeds shown in 3(a) page 1, please estimate:

Percent that had a pre-mix as a base.............................. ______

Percent manufactured from basic ingredients....................... ______

Total... 100

4. Of the total amount of feed shipped from your mill or mills, indicate:

(a) Percent transported:		(b) Percent of rail shipments made:		(c) Percent of truck shipments made:	
(1) By rail	___%	(1) In bulk	___%	(1) In bulk	___%
(2) By truck	___%	(2) In sacks	___%	(2) In sacks	___%
Total	100 %	Total	100 %	Total	100 %

5. Did you operate any of the following feed ingredient manufacturing plants:

Alfalfa dehydrating plant.................................. Yes ______ No ______
Soybean oil mill... Yes ______ No ______
Rendering plant.. Yes ______ No ______
Other (describe)____ Yes ______ No ______

II. WHOLESALE DISTRIBUTION

1. Local cooperatives and dealer agents your association supplied with formula feeds and ingredients: (Do not include retail outlets you operated, if any, and report under Section III.)

(a) Local cooperatives....................................(number) ______

(b) Private dealer agents.................................(number) ______

2. Quantity of feed your association distributed at wholesale: (Exclude transfers to your own retail stores or warehouses.)

Type of feed	Total	To local co-ops	To other wholesale co-ops	To other firms
(a) Formula feeds[1].........(tons)	______	______	______	______
(b) Whole and cracked grains.(tons)	______	______	______	______
(c) Ingredients[2]...........(tons)	______	______	______	______

III. RETAIL DISTRIBUTION

1. Local feed stores and warehouses your association operated..(number) ______

2. Volume of feeds you sold at retail (estimate if data are not available):

(a) Formula feeds[1]..(tons) ______

(b) Whole and cracked grains..................................(tons) ______

(c) Ingredients[2]..(tons) ______

(d) Hay and other roughages...................................(tons) ______

[1] Include all mixed feeds, concentrates, supplements, and scratch feeds.
[2] Include all other feeds such as protein meals, grain by-products, beet pulp, molasses, minerals and the like.

(Continued)

3. Stationary mills operated by your association for custom grinding and mixing....................................(number) ______

   (a) Volume custom ground[1]................................(tons) ______
       (1) Proportion of above, if any, that was first stored in your "grain bank" program ______ %
   (b) Volume custom mixed...................................(tons) ______

4. Mobile mills operated by your association for custom grinding and mixing....................................(number) ______

   (a) Volume custom ground[1]................................(tons) ______

   (b) Volume custom mixed...................................(tons) ______

IV. WAREHOUSING AND DELIVERY:

Item	For wholesaling only	For retailing only	For wholesaling and retailing	Total
1. Feed warehouses for sacked feed you operated (other than at the mill)................(number)				
2. Bulk feed loading stations you operated:				
(a) Bulk truck loading stations at mills....(number)				
(b) Bulk feed transfer or relay stations....(number) (often located 50 to 100 miles from mill)				
3. Bulk storage capacity for finished feeds:				
(a) At mills.................................(tons)				
(b) At bulk feed transfer-relay stations......(tons)				
4. Feed delivery trucks your association operated (owned and/or leased):				
(a) Sacked feed delivery trucks[2]...........(number)				
(b) Combination sacked and bulk feed delivery trucks[2] (bag to bulk) ....(number)				
(c) Bulk feed delivery trucks[2].............(number)				

5. Volume of outbound feed delivered by your trucks:

	Wholesale	Retail
(a) In sacks................................(tons)		
(b) In sacks and transferred to farmers' bulk bins (bulk to bin or bag to bulk).........(tons)		
(c) In straight bulk........................(tons)		

V. FEED FINANCING

Volume of feed sales financed during last fiscal year under each of the plans listed below. Exclude regular accommodation credit, such as 30 days. (Estimate if data cannot easily be compiled.)

Type of plan	Direct to farmers	To or through local associations
1. Seasonal, long-term, or contract feed financing:		
(a) Title of poultry or livestock remained with grower	$	$
(b) Title remained with cooperative..................		
2. Loans by an affiliated credit corporation or association..		
3. Loans by an affiliated rural credit union............		xxxxx
4. Loans you wholly or partially guaranteed to local banks or PCA's.......................................		xxxxx
5. Other (describe)______		

[1]Include only quantity actually ground. Do not include ground feeds merely fed through the grinder.
[2]Include straight trucks and tractor-trailer units, but do not count extra trailers used with such units.

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Other Publications Available

The Story of Farmers' Cooperatives, Educational Circular 1.

Organizing a Farmer Cooperative, FCS Circular 18.

Using Your Farm Supply Co-op, Educational Circular 6.

Mobile Feed Milling by Cooperatives in Michigan and Wisconsin, General Report 63. Arno J. Hangas.

Cooperative Alfalfa Dehydrators - Costs and Operations, Circular 12. Lacey F. Rickey

Feed Bags - Kinds, Costs, and Problems, Circular 2. Lacey F. Rickey.

Delivering Feed in Bulk, Circular 3. Lacey F. Rickey.

Operating Costs of Selected Cooperative Feed Mills and Distributors, Bulletin 56. Lacey F. Rickey.

Economics of Grain Drying at Kansas Local Elevators, Marketing Research Report 449. J. C. Eiland and L. Orlo Sorenson.

What Influences Off-Farm Grain Sales in Missouri? General Report 91. Francis P. Yager.

Farm Supply Operations of Cooperative Gins and Elevators in Texas, General Report 92. John M. Bailey.

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